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A METHOD FOR EVALUATING OR MEASURING THE ATTITUDES OF (a) RESPONSIBILITY, AND (b) COOPERATION

A DISSERTATION SUBMITTED
TO THE COMMITTEE ON GRADUATE STUDIES
IN PARTIAL FULFILMENT OF THE DEGREE OF
MASTER OF EDUCATION

FACULTY OF EDUCATION

by
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VANCOUVER, BRITISH COLUMBIA
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TABLE OF CONTENTS

Chapter		Page
I.	INTRODUCTION	1
II.	THE PROBLEM	8
III.	PLAN OF PROCEDURE	12
IV.	DESCRIPTION OF THE TEST	23
V.	THE DISTRIBUTION OF EVIDENCE	34
VI.	COMPARATIVE EVIDENCE	49
VII.	CONCLUSIONS	71
BIBLIOGRAPHY		74
APPENDICES		76
A.	First Test of Pilot Study	76
B.	Second Test of Pilot Study	77
C.	The Test that was Administered to Grades Four, Five, and Six	80
D.	Teachers' Form for Evaluating the Pupils	89
E.	Results of the Tests for Cooperation and the Teachers' Evaluation (TABLE XIV)	90
F.	Results of the Tests for Responsibility (TABLE XV)	94
G.	The Distribution of Responses to the Four possible Ways of Answering each Pair of Questions in Sub-test II (TABLE XVI)	98
H.	The Distribution of Scores for Sub-test I (TABLE XVII)	99
I.	Detail of Computation for t-values	100
J.	Detail of Computations for Phi-coefficients	103

LIST OF TABLES

Table		Page
I.	The distribution of responses to the six questions in sub-test II, expressed in percentages	35
II.	The teachers' evaluation of the pupils taking the test in the three features of responsibility and the two features of cooperation	36
III.	The distribution of responses for sub-test V	39
IV.	The distribution of responses for sub-test VI	41
V.	The distribution of responses for the 25 essential statements in sub-test I, expressed in percentages ..	43
VI.	The distribution of responses for sub-test III	45
VII.	The distribution of responses for sub-test IV	45
VIII.	The distribution of responses for sub-test VII	47
IX.	The t-values of the teachers' evaluations based on high scores - low scores division of pupils' scores in responsibility and cooperation	56
X.	The correlation of items in the features of (1) responsibility and (2) cooperation by calculating the phi-coefficients	56
XI.	The correlation of items in the features of responsibility and the teachers' evaluation in these features	59
XII.	The correlation of various items and parts of the test with the teachers' evaluations, by computing the phi-coefficients	61
XIII.	The t-value of the teachers' evaluations based on high scores - low scores division of pupils' scores in responsibility and cooperation	65
XIV.	Results of the tests for cooperation and the teachers' evaluation	90

LIST OF TABLES - continued

Table		Page
XV.	Results of the Tests for responsibility and the teachers' evaluation	94
XVI.	The distribution of responses to the four possible ways of answering each pair of questions in sub-test II	98
XVII.	The distribution of scores for sub-test I	99

SYNOPSIS

The writer's objective in this study was to explore the possibilities of a pencil-and-paper type test as a means of evaluating in the area of attitudes, described in the Objectives of Education, Bulletin II, Department of Education, Edmonton, Alberta. The work was limited to the two attitudes of responsibility and cooperation.

The procedure consisted of (1) devising a test made up of seven sub-tests, each concentrating on one of the two attitudes, or on a specific feature of either of them; (2) administering the test to 219 pupils of grades four, five, and six, in two elementary schools in the city of Edmonton; (3) analysing the results. To provide a standard by which the effectiveness of the test could be judged, the home-room teachers of the pupils tested supplied their own ratings of their pupils in each of the test-units.

It was evident from preliminary experiments in the application of the test that, generally, it had considerable worth, but that certain refinements of it were necessary to improve its usefulness - particularly inasmuch as some of the sub-tests were found to be more valid and reliable than others.

Results from the use of the amended form were definitely indicative of the feasibility of constructing a pencil-and-paper test to incorporate the principle of projection and, also, of the serviceability of this form as a means of evaluating such intangibles as are included in the section "Objectives of Education."

CHAPTER I

INTRODUCTION

At the present time many courses of study, in defining the objectives of education, include personality and character-development as well as academic achievement. The former are considered to be of as much value as the latter in fitting the child for his role as an active member of society. Teachers are entrusted not only with the responsibility for the pupil's mental growth and attainment but also with the development of his personality and character along desirable lines and toward desirable outcomes.

The centre of interest for this study must of necessity be definitely related to objectives, for it attempts to determine whether it is possible to measure the effect of educational procedures aimed at the attainment of such objectives. If the outcomes of procedures designed to encourage mental growth are measurable by tests, why should not the outcomes of procedures designed to encourage the development of personality and of character also be measurable by suitable tests? It is as desirable in the case of the latter as it is in the case of the former to be able to get from accurately measured results the assurance of satisfactory attainment of objectives.

The Objectives of Education as set forth by the

Department of Education for the Province of Alberta are as follows:[1]

> The ultimate goal of education is the happiness of the individual. Accordingly, the teacher's purpose is to assist each child in the class to unfold as fully as possible his unique potentialities; he should direct his attention primarily to the welfare of each boy and each girl, recognizing that if every child as an individual in his own right is given the opportunity for proper physical, mental, emotional, social and spiritual growth, he will cheerfully and understandingly fulfil his responsibilities to his fellows.
>
> Just as desirable goals are defined in terms of personal growth, so the progress toward those goals must be measured in terms of personal action. The aim of the school is not so much to teach pupils all the facts they have not yet mastered as to hasten into action all the desirable behaviours they have not yet attained. It is acknowledged that our educational system is effective only to the degree that pupils improve in their thoughts and actions as a result of school attendance. Fortunately, the task of the elementary teacher in observing and evaluating outcomes through actual child behaviour is lightened by the fact that young children tend to translate their inner thoughts readily and directly into spoken words and overt activity.
>
> What then, are the desirable growths we seek to foster most in the children of Alberta schools? They are classified in four categories:
>
> I. Attitudes:
>
> Each child should have experiences that help to develop:
>
> 1. Self-respect - marked by control, discipline and direction through one's own initiative.
> 2. Creativeness - marked by personal expression that becomes unique and revealing.
> 3. Scientific viewpoint - marked by the power to delimit problems, search for data, weigh evidence, form conclusions, and above all to evaluate one's own judgment in the light of subsequent events.
> 4. Cooperation - marked by consideration for the rights and feelings of others and a willingness to share cheerfully.
> 5. Responsibility - marked by readiness to carry tasks to completion, to behave honestly with oneself and with others, and to accept the consequences of one's own actions.

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[1]Province of Alberta, Edmonton. Bulletin II, Department of Education, 1949, p. 10.

6. Social concern - marked by earnest effort to implement whatever desirable ends the group may seek.
7. Reverence - marked by a conviction of Deity, and a regard for His supreme handiwork, mankind.

II. Appreciations:

Each child should have experiences that emphasize:

1. The dignity, worth and possibilities of the individual reflected in a high standard of conduct for oneself, and a high regard for other people, and their values and beliefs.
2. The dignity, value and achievements of work in science, in religion, in philosophy, in art, in literature, in craftsmanship, in honest labour everywhere.
3. The manifestations and beauties of Nature - both in the natural state and as revealed through science.
4. The increased values derived through associations with others - in recreation, in conversation, and other expression, in common cultural activity, with a special appreciation of the family relationship and its stabilizing influence.

III. Understandings:

Each child should learn to recognize the significance of:

1. The social life of expanding communities.
2. The interdependence of all forms of life.
3. The effects of environment on human life.
4. Man's increasing control over nature.
5. Man's increasing knowledge of social development and social control.
6. The contributions of the past to the present.
7. Democracy as a way of life.
8. Responsibilities inherent in a democratic way of life.

IV. Abilities and Skills:

Each child should increase his capacities to:

1. Read for one's own pleasure and to obtain needed information.
2. Communicate with others orally and in writing.
3. Listen.
4. Find, organize and use information.
5. Use numbers and mathematical processes effectively.

7. Express oneself through artistic media.
8. Maintain health.
9. Function as a wise purchaser and consumer.
10. Maintain concentrated efforts in accordance with native ability and natural maturation.

The present study is concerned with the first division outlined above; that is, attitudes. Of the seven attitudes listed, cooperation and responsibility were selected as the basis of the study. It is interesting to note that of the four divisions in the classification of the "objectives of education," the first two may be considered as pertaining to the "intangibles", - those aspects of learning which are not acquired by the memorization of facts or the acquisition of skills; they are connected more with the child's personality and character than with his mental acumen.

During the past few decades much attention and consideration have been given to measuring the outcomes of our educative processes as they are related to the child's ability and skill. "Rather effective methods have been developed for measuring learning that involves the acquisition of facts and knowledge, and much progress has been made within the past few years in appraising learning that results in the ability to use knowledge, apply principles, and make inferences."[2]

The practice of setting an examination to determine how much the child has "learned" dates back a good many years. At

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[2]S. M. Corey, "Measuring Attitudes in the Classroom," Elementary School Journal: 43, April 1943. p. 457.

the present time there are techniques of "testing" for acquisition of knowledge and skills. These are not only highly efficient but quite diversified as to the methods used. It is only recently that attention has been turned to the "other outcomes of education," no doubt because there has been a considerable change in our conception of what the educative process should achieve. If, as is probably the case, modification of the aims and objectives of education during the past half century occurred as a result of what was learned through administration of tests in the field of the "tangibles," then it may be that, vice versa, there is presently some probability of additional testing-instruments being developed in the field of the "intangibles," so that outcomes may be assessed in the light of recent changes in "aims and objectives" providing for the inclusion of the "intangibles."

In a publication entitled, "Proceedings of the Northwest Conference on General Education," sponsored by the Western Washington College of Education, Bellingham, the position suggested in the preceding paragraph is supported by Dr. Maurice Freehill, in an article "The Evaluation of Attitudes in General Education."[3]

> Part of any teaching job is stock-taking. It is always necessary to examine the direction and the rate of progress. If attitudes are in the objectives they must be measured. This is not a matter of choice. It never has been. Educators have always made estimates of attitudes. The issue is how? - not shall.

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[3]Maurice F. Freehill, "The Evaluation of Attitudes in General Education," Proceedings of the Northwest Conference on General Education, Western Washington College of Education, Bellingham, Feb. 29 - Mar. 1, 1952. p. 85.

> Are the methods of intuition and guess enough or is it necessary to develop more adequate instruments?

It is not surprising that progress in scientific measurement in the area of the "intangibles" has not reached expectations, for the complexity of the difficulties to be overcome in that case is much greater than in the testing of the "tangibles." Dr. Freehill precedes the above statement with the following remarks:[4]

> Attitude-testing theory is perhaps as advanced as was intelligence-testing theory with Burt or Cattell or Pintner just after Binet. In recent years, the educational objectives have become more complex and it is fair to expect more difficulties in evaluation. It is comparatively easy to test outcomes of a "say after me" brand of education, but it is extremely difficult to appraise the success of critical, self-directive and integrated learning. The simple task of measurement in the "who said that - when," kind of literature is not comparable with the task of measuring appreciation. Memorized facts of history - names, dates and incidents are readily discovered, but not so is world understanding, cooperation and empathy. However, these latter are equally or more a part of modern educational objectives.

The writer has undertaken to find out whether it is possible at the level of grades four, five, and six, by means of a pencil-and-paper type test, to measure effectively in the area of the intangibles; in particular, to measure the attitudes of responsibility and cooperation. Are these attitudes sufficiently well developed at that stage of school life to be detected in one way or another? Can a modified form of the "projective technique" be used in these grades by means of pencil-and-

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[4] Maurice F. Freehill, op. cit., p. 85.

paper tests? Will children of these grades find such a test acceptable? The answers to such questions as these are to be found through a process of suitable experimentation, involving the administration of a test and the analysis of the results obtained. This study is a description of such a process, and it is hoped that, at least in some small way, it will make a contribution to a solution of the problem of the measurement of the "intangibles," particularly as the need of it occurs in the elementary grades.

As will be noted in a later chapter, the majority of the investigations being carried on in this field are limited to social attitudes at junior high school, senior high school, and college levels. The present study is singular in so far as it is directed towards the production of a test for pupils of grades four, five, and six, designed to measure specific attitudes as enumerated in "the objectives of education" set forth in a course of study for the elementary school in Alberta.

CHAPTER II

THE PROBLEM

If, as is indicated in Chapter I, education is to be directed toward the development of desirable traits of personality as well as to the acquisition of skills and abilities, then some means should be developed by which administrators and teachers can ascertain whether or not such objectives are being attained. For evidence of the need for such means we have only to examine the present day "pupil's report-card." On it a teacher's ratings are required, not only on academic achievement but also on character and personality traits. Under such circumstances the classroom teacher is solely responsible for the evaluation of pupils in respect to attitudes. There are, it is true, directives prepared to guide the judgment of the teacher, but even so the evaluation has, so far, remained subjective in nature. The teacher has in this case no "test" to use, as he has in the rating of academic achievement, where the subjective factor can, by the use of reliable tests, be largely removed. How much character and personality rating is done by "intuition and "guessing"? Faced with this rating-task every time report cards are issued for from thirty to fifty pupils, the teacher has little time to make an unbiased and considered estimate. In over-crowded classrooms, few teachers have the time to keep anecdotal records, or to jot down notes on behaviour patterns

through observation.

In determining the effectiveness of our educational system in realizing the objectives of education, emphasis has been on skills, abilities, and understandings, rather than upon attitudes and appreciations, because of the intangible nature of the latter. Is it possible to test for an attitude objectively? Are such attitudes as responsibility and cooperation sufficiently developed to be detected? Can the objectivity of the testing be accomplished by means of a pencil-and-paper test? If the answer to these questions is yes, then it should be possible to go a step further and determine if methods of education such as the enterprise method as practiced in Alberta schools contribute to improvement of these attitudes. Questions such as these occur during a preliminary exploration of the problem. The study undertaken by the writer is limited to finding answers to them; it does not include any attempt to show the nature and amount of influence on the development of these attitudes from one or another kind of educational procedure. As the study progressed in its initial phase, it became apparent that the discovery of a technique for measuring, or evaluating, the attitudes of responsibility and cooperation, and the revelation of the effectiveness of such a technique, would constitute an undertaking of sufficient proportions for this study.

As stated in Bulletin II,[5] cooperation has two

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[5]Department of Education, Edmonton, op. cit., p. 10.

components, or features - (1) consideration for the rights and feelings of others; and (2) a willingness to share cheerfully. These are referred to as "rights and feelings", and "sharing" in the present study. Responsibility has three components, or features - (1) readiness to carry tasks to completion, (2) to behave honestly with oneself and others, and (3) to accept the consequences of one's own actions. These are referred to as "completion of a task", "honesty", and "consequence of actions."

It was decided that these five components would constitute a test of sufficient variety and length if each attitude were considered separately, assuming that one test may incorporate two components in the case of cooperation, and three in the case of responsibility. Thus the complete test was visualized as being made up of several sub-tests, each of which would deal with a single feature of one of the attitudes or with a composite of all of its features.

The problem of devising a test seemed to be one of creating situations in which two courses of action were open to the child. One action, or form of behaviour, would indicate the possession of a feeling of responsibility or cooperation; the alternative course of action would indicate irresponsibility or non-cooperation. The projective-type test seemed to be the most suitable for providing these conditions. Projection by means of statements in the first person, stories containing characters with which to identify, and picture or cartoon situations providing the projection medium, was considered to be within the

experience and comprehension of pupils of grades four, five, and six.

The most readily available and acceptable standard against which the effectiveness of the test might be measured would be the evaluation of the testees by their classroom teachers. Consequently, at the time of administering the test, the teachers were provided with forms (see Appendix D) on which each testee could be rated by his teacher as "above average," "average," and "below average," in each feature of each of the two attitudes.

To summarize, it may be stated that the study is confined to an enquiry into the feasibility of a pencil-and-paper test for two attitudes, responsibility and cooperation, in grades four, five, and six, using modifications of the projective technique. To estimate the effectiveness of the test the results are compared with the ratings by the teachers of the pupils to whom the test was given.

CHAPTER III

PLAN OF PROCEDURE

The word "attitude" is open to a variety of interpretations. Webster's Unabridged Dictionary defines the word as: "A state of mental or especially emotional readiness for some form of activity, as observant attitudes." Funk and Wagnall's Standard Unabridged Dictionary defines attitude as "Any habitual mode of regarding anything; any settled behaviour or conduct, as indicating opinion or purpose regarding anything." The Winston Dictionary, Advanced Edition, defines attitude as: "Such an habitual or instinctive mental reaction in regard to a matter as reveals opinion; conduct as indicating opinion; as the attitude of the newspapers."

These definitions are concise statements affording only general interpretation. The psychologist is able to present a more detailed interpretation and to provide a better understanding of what is involved by the word "attitude". The following quotations from "Attitudes" by G. W. Allport appear in the Handbook of Social Psychology:[6]

> An attitude is a mental and neural state of readiness, organized through experience, exerting a directive or dynamic influence upon the individual's response and situations with which it is related.

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[6]Carl Murchison, Editor; Handbook of Social Psychology, Worcester, Mass.: Clark Univ. Press, 1935. Chap. 17, p. 810.

> The attitude is incipient and preparatory, rather than overt and consummatory. It is not behaviour but the precondition to behaviour. It may exist in all degrees of readiness from the most latent, dormant traces of forgotten habits to the tension or emotion which is actively determining a course of conduct that is under way.
>
> An attitude characteristically provokes behaviour that is acquisitive or assertive, favourable or unfavourable, affirmative or negative, toward the object or class of objects with which it is related. This double polarity in the direction of attitudes is often regarded as their most distinguishing feature.
>
> One of the chief ways in which attitudes are built up is through the accretion of experience, that is to say, through the integration of numerous specific responses of a similar type. It is not, as a rule, the discrete and isolated experience which engenders the attitude; for in itself, the single experience lacks organization in memory, meaning, and emotion. An attitude is characteristically a fusion, or, in Burnham's terms, a 'residuum of many repeated processes of sensation, perception, and feeling'.

An attitude, then, involves a mental and emotional readiness or a precondition to behaviour, characterized by a double polarity in its direction, the resulting behaviour, conditioned by repeated experiences, indicating by reaction to an object or class of objects the manifestation of the attitude. An attitude of a person toward things which have a social implication may be thought of as a social attitude, such as attitude toward Negroes, attitude toward communism, attitude toward militarism. The use of the term "attitude" in a more restricted sense, as occurring in literature issued by the Alberta Department of Education, refers, no doubt, to certain personality traits, such as the attitude of self-respect, the attitude of cooperation, the attitude of responsibility. "By custom, however, the concept has become restricted to mean <u>social attitudes</u> - long-lasting predispositions to perceive social situations in a certain manner and to act

accordingly."[7] The writer's explorations for references to attitudes in the literature of research revealed considerable support for the contention in this quotation. The vast majority of the studies reported were carried on in the field of the social attitudes rather than in the area of specific attitudes such as responsibility and cooperation. Notable also is the scarcity of studies conducted in fields at the elementary level; for the most part they are related to subjects at or above the junior high school level. These two factors restricted the writer's use of research literature as it applies to this study.

The inclusion of new objectives in education during the past fifty years has resulted in revised thinking concerning approaches to evaluation. "The main concept guiding evaluation programs is that evaluation should be in terms of the extent to which pupils have attained the objectives of elementary education."[8] Educators have been in need of a method of evaluation which would not only test in the area of knowledge and skills but also in the area of personality and character development.

> There are, however, good reasons for believing that we are entering a new phase of appraisal in which a much broader concept will challenge the efforts of teachers. What are the main concepts of the appraisal of the instructional efficiency of a teacher?
>
> 1. Of major importance is the notion that the pupil will have a part and that his appraisal will be done in terms of goals that to him are desirable, definite, immediate, and attainable.
>
> 2. The new idea of evaluation is more comprehensive, for by it we try to measure some things that are

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[7] Ross Stagner, Encyclopedia of Educational Research, Revised Edition, edited by Walter S. Munroe; copyright, 1951, by the American Educational Research Association.

[8] J.M. Lee, and D.M. Lee, The Child and His Curriculum, New York, Appleton Century-Crofts, 1950, p. 596.

> more significant than the pupils' control of items of information. We try to get evidence on the heretofore intangible outcomes. Then, too, we are more concerned that the pupil shall understand something he has learned than that he remember it. We emphasize understandings and appreciation.[9]

The form of the modern report-card, with space provided for rating the pupil's character and personality, is evidence that appraisal is to be extended beyond the measurement of "the pupils' control of items of information." In the Edmonton school system,[10] the pupil is rated as to: Emotional Control, Creativeness, Judgment, Cooperation, Dependability, Courtesy, and Work Habits. The writer's choice of responsibility and co-operation as the attitudes with which to experiment was suggested by the inclusion of them in this list. Possession of these traits of personality is usually indicated by behaviour. "The real measure of interests, attitudes, appreciations, work habits and study skills is the behaviour of the individual."[11]

In a publication by Edmonton Public Schools[12] definitions of the seven "behaviour traits" are given. Those for responsibility and cooperation are as follows:

> Dependability (responsibility). This important trait, as every teacher knows, is not possessed to the same degree by every pupil. As with the others, the

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[9] R. Schorling and G.M. Wingo, Elementary School Student Teaching, New York, McGraw-Hill Book Co. Inc., 1950. p. 365.

[10] Edmonton Public Schools, Directions for Using Report Cards and Personality Rating Scales, p. 8.

[11] Schorling and Wingo, op. cit., p. 380.

[12] Edmonton Public Schools, op. cit., p. 9.

pupil's home and previous school experience are important factors in its proper development. A child who is developing a sense of responsibility will be sincere, trustworthy and dependable. He will be aware of the obligations of a promise and will learn to accept the consequences of his actions. The dependable pupil will take care of materials, show proper concern for personal and public property, carry out personal or group plans and be punctual.

Cooperation. The spirit of this trait is well expressed on the report-card in the expression, "Works and plays well with others." The cooperative child will help others willingly and will enter into group activities enthusiastically. The child who is developing cooperation will share materials with others, volunteer explanations, bring in materials, follow directions, allow others to help with work in which he is interested.

To aid the teacher in rating the pupils, a rating scale is provided. For cooperation and responsibility they are:[13]

Cooperation. Does he participate whole-heartedly in group activities?

Rating

1. Enters in readily, and cooperates fully in group work. Cooperative. Always agreeable. Enjoys team work and always tries to do his share. — Very Good

2. Shows interest in group work and usually enters into group activity. Usually agreeable and willing to help. Cooperates well if especially interested. Adaptable. — Good

3. Occasionally enters into group activity. Often difficult to handle. Not willing to help. — Fair

4. Actively interferes with others. Openly antagonistic. Disagreeable. Obstructive. Detrimental to group spirit and effort. — Poor

	1	2	3	4
Scale	Agreeable Enjoys team work	Usually willing to help. Adaptable	Difficult to handle Indifferent Occasionally refuses	Antagonistic Disagreeable Obstructive

[13] Edmonton Public Schools, op. cit., p. 12.

Dependability (responsibility). Is he trustworthy and willing to accept responsibility for his own actions?

Rating

1.	Thoroughly reliable. Assumes much responsibility. Carries through whatever he undertakes. Also shows initiative and versatility in accomplishing and enlarging upon undertakings.	Very Good
2.	Usually reliable and conscientious. Dependable if task is of moderate duration. Usually carries through undertakings self-assumed or assigned by others, requiring only occasional reminder or compulsion.	Good
3.	Requires much supervision. Has to be prompted frequently. Can be relied upon to complete undertakings only when they are of moderate duration or difficulty, and then only with much prodding and supervision.	Fair
4.	Unreliable. Irresponsible. Neglects promises and obligations. Cannot be relied upon to complete any undertaking even when constantly prodded and guided.	Poor

	1	2	3	4
Scale	Reliable	Usually Reliable	Somewhat Dependable	Unreliable

It would seem that such a rating scale is necessary in order that there may be some standard to which ratings by the several teachers will conform. The method of rating, to which the above scale belongs, is, however, objectionable in that it permits prevalence of the "subjective" factor at many important points, as, for example, the attitudes. The patterns of behaviour are set forth by means of the scale, and the teacher is

required to rate the child's behaviour as it seems to fit one or another of these classes or degrees of behaviour. Bias, halo effect, and partiality would seem to be difficult factors to eliminate during the process of rating by the teachers.

Another method of rating through observation of behaviour is given by Leonard and Eurich[14] in a study of the Santa Barbara County Schools. Guide questions are provided for the teacher in order that interpretation of behaviour may be guided within certain limits.

> The schools set up as the aims of education the development of self-respect, creativeness, the scientific outlook, cooperation, responsibility, and social effectiveness.
>
> In guiding the experience of their students, teachers are encouraged to analyse individual development in each attitude by asking questions like the following:
>
> .....
> .....
> Cooperation
> Does the pupil give evidence of ability to adjust his own ideas to group reaction?
> Does he share his ideas eagerly with other members of the group?
> Does he help other members in group enterprises?
> Does he work happily with other members of his group?
>
> Responsibility
> Does the pupil assume leadership in the field in which he is competent?
> Is he willing to follow others in fields where others are more competent than he?
> Is he faithful to promises?
> Is he willing to accept responsibility for his own acts?
> .....
> .....

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[14] J. P. Leonard and A. C. Eurich, An Evaluation of Modern Education, New York, D. Appleton-Century Co. Inc., 1942, p. 103.

The ratings of the pupils on the attitudes are, in this case, subject to the personal interpretations of the teachers, as they are in the case of the Edmonton School System. The same factors of bias, halo effect and partiality are likely to enter into the "evaluation".

A further example of the observational technique, although not so closely associated with the areas just cited, is the work done by Pistor[15] in determining the influence of the new curriculum on attitudes.

> In the appraisal of personal-social relationships various studies have been reported. Most of these studies have been based upon observations made either by means of conduct rating scales or controlled observational techniques.
>
> Pistor investigated to discover whether superior behaviour and work habits of the children working under the newer procedures resulted from classroom instruction or from superior qualities in the children. Pistor himself instructed two groups of children in the fifth grade, one of which had previously attended a conventional school whereas the other group had experienced a more modern type of education. Both groups were observed under identical classroom conditions. The conclusion by the author of this study was that the pupils who experience three years of newer curriculum practices were found to be superior in initiative, work spirit, reliability, and cooperation....
>
> The study does not claim that the new curriculum develops such qualities, but it does show that the new classroom procedures enable such qualities to emerge.

Another familiar observational technique in compiling evidence of behavioural patterns is the use of anecdotal notes or the actual noting down of a specific behaviour as it occurs. It is unlikely that these two techniques would be used regularly

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[15] Leonard and Eurich, op. cit., pp. 171, 173, 176.

or even occasionally, by the average teachers. Because they are time consuming they are impractical for use with large classes.

One method of eliminating the subjective element in evaluation in the area of the intangibles would be to devise a pencil-and-paper type test which would attempt to reflect the predisposition of an attitude of the child.

From the research so far done in the area of attitude testing there have emerged four generally accepted methods or techniques.[16] These are: (1) attitude survey and opinion-poll techniques, (2) situation techniques, (3) projective and other non-structured techniques, and (4) the use of expression by graphic art. In each of these, a great number of methods have been evolved. It was noted that almost invariably, the word "attitude" was interpreted as to its social implications and with respect to subjects who were in older age-groups (from junior high school to adult levels) than those with whom this study is concerned.

In the attitude survey and opinion-poll techniques category, such methods as rank-order, initiated by Cattell,[17] the principle of equal-appearing intervals by Thurstone and

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[16] Attitudes Handbook, Cooperative Study of Evaluation of the American Council on Education, Box 432, Michigan State College, East Lansing, Michigan, p. 15 (Mimeograph).

[17] Ibid., p. 16.

Chave,[18] and Stephenson's Q-Technique[19] were not considered adaptable for use in a pencil-and-paper test to be administered to grades four, five, and six.

The writer also felt that in the "situations-technique" category such methods as direct observation in attitude assessment,[20] and the situation-and-role-playing technique,[21] were not of an adaptable or usable nature, but that the situation-and-performance technique[22] did offer possibilities for adaptation. This latter consists of disguised, indirect methods of attitude-appraisal, which present the subject with situations so structured by instructions that possible responses are restricted to those provided in the test.

In the third category of projective and other non-structured techniques, such methods as the Rosenzweig Picture-Frustration method[23] could be adapted to portraying situations

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[18]L. L. Thurstone and E. J. Chave, The Measurement of Attitudes, University of Chicago Press, 1929.

[19]W. Stephenson, "The Q-Technique Study of Personality," Translations, New York Academy of Sciences, 6, 215-219, 1949.

[20]L. L. Jarvie and Mark Ellingson, A Handbook on the Anecdotal Behaviour Journal, The University of Chicago Press, Chicago, Ill. 1940.

[21]J. L. Moreno, Spontaneity Test and Spontaneity Training, Psychodrama Monographs, No. 4, Beacon House, 1944, 22 p.

[22]E. B. Greene, Measurements of Human Behaviour, The Odyssey Press, New York, 1941, p. 485-520.

[23]J. E. Bell, Projective Techniques, New York, Longman, Green & Co. 1948, p. 264.

involving the two aspects of cooperation: sharing, and the-rights-and-feelings-of-others. Finally, arising out of the story completion method,[24] was the technique of using the story form to create a situation into which the subject might project and identify, and of controlling reaction by statements or questions at the end of the story.

Methods belonging to the fourth category, the use of expression by graphic arts, have been employed exclusively in the field of psychology, but seem to be untried, as yet, in the field of attitude testing.[25]

The writer feels that it would not be appropriate to devote further space to an examination of the numerous techniques which have been studied in the measurement of attitudes. The reason is that, in this study, the term "attitude" is used to denote two specific personality traits, responsibility and co-operation, whereas in current research-literature the term has a broader connotation, i.e., a social significance. Consequently, it is perhaps sufficient to say that, in devising the test, the writer was influenced in his selection of a technique by a marked suitability in the cases of the projective method and the-performance-and-situation method, for use not only in the study of personality but also, through modification, in the measurement of social attitudes.

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[24] Bell, Projective Techniques, p. 59.

[25] Attitudes Handbook, op. cit., p. 75.

CHAPTER IV

DESCRIPTION OF THE TEST

The writer desired, as the main feature of the study, to investigate the possibilities of a pencil-and-paper type test in determining a pupil's possession of the attitudes of responsibility and cooperation. Since the pupils to be tested were in grades four, five, and six, the material would need to be well within their powers of reading competence and comprehension. Several problems presented themselves at the outset.

The foremost of these was to put before the child material of such a nature that it would evoke his true feelings without arousing at the same time a response dictated by the way society expected him to react. The point is that without revealing the true feeling he might possess in relation to being responsible or cooperative, the child could possibly respond to certain material in the way that would conform to his knowledge of what is acceptable. The fact is that whether the subject be child or adult the outward manifestation of an attitude depends largely on his consciousness of acceptance or rejection by the society he finds himself in at the time. The evidence of possession or nonpossession of an attitude of responsibility or cooperation is commonly thought to be revealed in the subject's behaviour to his fellows; but true feelings are often masked by actions one is forced to go through in order to conform to patterns as dictated

by society, one's peers, or one's elders. These complications of the problem had to be reduced as nearly as possible to a minimum, and the issue kept as much as possible within the bounds of simplicity.

To give needed subtlety to the test, so that the children would react according to their true feelings, the technique of projection seemed to be the most efficacious.

The second problem was to place before the children a test which they would enjoy doing. Each of the sub-tests would have to be appealing, and of such a form as not to require any excessive mental effort to complete. Since boys and girls of this age and grade-level are particularly fond of animal stories, and readily identify themselves with animal characters, it was thought that a test using this medium would be stimulating. It was assumed, too, that a test using a picture or cartoon would appeal to testees on this grade-level, and that identification with a principal character would in such case be quite natural. Another form of test-construction which could be easily handled at this grade-level would be a questionnaire composed of simple statements in the first person, the testee expressing agreement or disagreement with the statements, underlining either "yes" or "no". The words "true" and "false" were discarded as being a source of confusion for the younger children in grade four.

The third problem was to keep the test within the age-range and at the grade-level of the testees. The writer believed it preferable to have a self-directing test which the

pupils could "work through" after reading the initial directions on the title page. The vocabulary of the test, and also of the directions for completing each sub-test, should be within the abilities of all three grades. The test should be short enough to prevent waning of interest in the case of the poorer readers.

It has already been shown that the attitudes of responsibility and cooperation, as defined by the Department of Education in Alberta, are made up of distinct components or features. In creating situations for the tests it seemed advisable to deal with these features individually. Since these two attitudes are to be treated as "objectives of education", there should undoubtedly be references to classroom situations as well as to fictitious ones.

A pilot study was conducted for responsibility, and a test constructed, consisting of three paragraphs, each concerned with one feature of responsibility (Appendix A). The first paragraph, testing for completion of a task, presented a situation wherein the children could identify themselves with a boy or girl doing a monitor job. The purpose of the first question was to find whether the situation were common to all children, and the second question was so worded as to allow for projection into the situation described in the paragraph. The second and third paragraphs followed the same plan. The test was administered to a grade four and five class.

The results of the testing indicated (1) that either monitor-jobs are not common to all children, or their understanding of the term is lacking; (2) that the library situation was not clearly understood in that a large percentage of the children did not consider themselves as the last ones to leave; and (3) that some children had not been out in rainy weather. There seemed to be no difficulty experienced by the testees in answering the second question of each paragraph. It was clear from these results that more common situations would have to be depicted. Another difficulty to overcome became clear as the test was administered and marked: the test must measure more specifically what the pupil actually felt or did, and not his knowledge or what was "the right thing to do." It was for this reason that the element of projection was introduced.

A second test (Appendix B) was constructed and administered to the pupils in grades four, five, and six. The first paragraph tested for consequence of action, the second for honesty, and the third for completion of a task. The fourth paragraph, a little story about animals, was designed to eliminate the sex difference in the projection process, and to test for all three features of responsibility at one time. The first question was asked to bring out irresponsibility in completion of a task, the second to bring out the element of honesty, the third for consequence of action, and the fourth for completion of a task.

An examination of the results of the test showed that the first three paragraphs had failed to effect an improvement

in pupil reaction whereby there would be response from true feelings only, without influence or suggestion from possession of "good sense about such matters," but that the fourth paragraph was encouraging in this respect. A pupil who had a well developed sense of responsibility would go ahead and answer the four questions unhesitatingly and correctly, and probably not see the obviousness of the situation, as the testees evidently did in the first three paragraphs. The teachers, in whose rooms the tests were administered, were asked to grade the children in responsibility under the subdivisions of completion of a task, honesty, and consequence of action. The results of the second test indicated that an animal story seemed to provide an effective means of setting up a situation, and that if classroom situations were to be used, entirely new tests and questions would have to be used to eliminate the possibility of answers being given as the ones known to be "expected".

The final test, which was administered to 219 pupils in grades four, five, and six, was composed of seven subtests (Appendix C). The subtests which tested for responsibility are II, V, and VI; those which tested for cooperation are I, III, IV, and VII.

The order in which the sub-tests were placed was arrived at by putting first the sub-test which would be most interesting and comparatively easy, and placing the picture subtest in the middle to alleviate the reading task inherent in the test. The other sub-tests were placed according to whether they

had to do with responsibility or cooperation, and were arranged so that all of one type were not together.

Sub-test II is a story about three animals, a mouse, a rabbit and a squirrel who live together. The squirrel has experiences involving (1) behaving honestly with himself and others (in this case the mouse and rabbit); (2) being made to accept the consequences of his own actions; and (3) facing the need of completing a task. It is desired to have the children identify themselves with the squirrel and, in their responses to questions, show their reactions to the situations the squirrel experienced. A Yes response to the question, "Should the mouse and rabbit have sent the squirrel away?" and "Should the squirrel have left the mouse and rabbit?" would indicate that the child recognizes the consequences of the squirrel's actions in playing with the chipmunk, and so failing to bring home food. Such a response would credit the child with possessing the desired behaviour pattern for this feature of the attitude of responsibility. A No response to the questions "Should the squirrel have told the excuses he did?" and "Was the squirrel right to tell about the fox and dog?" would indicate that the child is predisposed toward honesty, while a Yes response to these questions would indicate a reaction in approval of dishonesty. A Yes response to the question "Should the squirrel have been sent out for food again?", and a No response to the question "Should the squirrel have played with the chipmunk?" would indicate that the child recognizes the squirrel's obligation to complete the task. A converse response in each of

these questions would indicate a predisposition toward irresponsibility in the completion of a task.

In sub-test V, the writer experimented with another animal story about which only three questions were asked. A choice of one of them, as the testee's response, would determine whether such a test would reveal a reaction in any one of the three features of responsibility. The results showed that in only 11 cases of the 219 was a choice made other than the statement "Go across the brook and catch mice," as expressing the correct way of behaving. For such a test as this to be effective, there would need to be more statements from which to choose, and the three features of responsibility set forth more clearly. In this story, the scene is set, and then it is left to the testee to indicate the behaviour he would follow in response to the situation.

In sub-test VI, an attempt was made to create a make-believe situation into which the child could easily project himself. The first paragraph creates a situation in which the consequence-of-action feature of responsibility is dealt with. Two reactions are offered, the first an indication of the lack of responsibility, and the second an indication of a feeling of responsibility. The second paragraph depicts the feature of honesty, and again two reactions are offered for choice: the first indicates a predisposition toward dishonesty and the second toward honesty. In the third paragraph the completion of a task is set forth. The first reaction offered would indicate a

lack of responsibility in completing a task, while the second would indicate a reaction showing responsibility in this phase.

Sub-test I, dealing with both features of cooperation, takes the form of statements expressing opinions centered around the classroom situation. Twenty-five of the fifty statements are put in as foils so that the pupil will not be conscious of too much emphasis on the classroom situations. All the statements are expressed in the first person so that any influence on sex and age level, or grade level, is eliminated. The pupil is asked to underline the word "yes" beside the statement if he thinks it is true, and the word "no" if he thinks it is not true. Credit is given if his choice of agreement or disagreement corrosponds to a positive feeling of sharing and a clear consciousness of the-rights-and-feelings-of-others as basic factors in the testee's experience of the "cooperation attitude". A mark of 25 would indicate a perfect score and a high degree of cooperativeness. The following analysis shows the characteristics of the statements and points up the similarity among many of them. This similarity was designed deliberately to reinforce the particular areas to which the statement pertains.

Group 1. Working with others indiscriminately.

3. I like working at school with other boys and girls.
26. I like working with other boys and girls.

Group 2. Working in groups.

18. I like working in groups in the enterprise period.

38. I would rather not work in a group with other boys and girls.
50. I don't like being in a group.

Group 3. Leadership and following.

24. I like doing what the group leader tells me to do in the enterprise period.
21. I like to be a group leader.
6. I like doing what the group leader asks me to do in the enterprise period.
31. I wouldn't like to be a group leader.
41. I like to order the boys and girls around when I am group leader.
19. I like being a monitor.

Group 4. Like or dislike of the enterprise method of working.

9. When I am doing enterprise work I don't care if I finish my work.
16. Sometimes I am not interested in enterprise work.
11 & 35 I like enterprise periods.

43. I never get to do what I want in the enterprise period.

Group 5. Working alone.

12. I like working by myself in school.

23. I think I can get more work done when I work by myself.
25. I don't like enterprise periods because I have to work with someone.

Group 6. Bothering others or lending a helping hand.

14. I like to bother people who are working.
17. I like helping other boys and girls when I have finished my enterprise work.
20. Sometimes I go around and bother other boys and girls who are working.
30. I like bothering other boys and girls.
39. When I am finished I try to help other boys and girls in my group.
46. I don't like to help anyone else in the group.

The repetition of these six main ideas for cooperation in slightly altered statements of them, or by the affirmative and negative approach, was thought by the writer to be desirable as a means of heightening the chance of a favourable response from children at this age-level. The testee's final score would reveal amount of consistency in responses; even should the amount be small, the final score has value as indicative of the degree of his possession of the attitude of cooperation, in terms of the test.

Sub-test III is an animal story involving the feature of sharing in cooperation, in which the situation created leaves the main character, Mrs. Squirrel, with a choice to make. Two alternatives are given for the response, the first one indicating a predisposition not to share and the second one to share. Credit is given if the second is chosen.

In sub-test IV, the opportunity for projection is provided through a modification of the Picture-Frustration technique in the portrayal of three scenes. The first one, depicting a situation in which the reaction sought is one of helping in the consideration of the rights and feelings of others, controls the response by means of a selection from four statements. The choice of the statement "I think I'll go over and help Howard" was considered as the proper response. The second picture illustrates a situation in which the reaction sought is one of sharing. The responses are controlled by four statements, and a choice of either "He could let them use them" or "It wouldn't hurt him to share his things" is considered the proper one for credit.

In the third picture the situation depicted seeks the testee's reaction as it applies to the rights and feelings of others. The responses are controlled by three statements, of which "I'm sorry you had to go out for the ball" is considered the proper one.

Sub-test VII uses an animal story to create a situation in which the rights-and-feelings-of-others feature of cooperation is depicted. The pupil is asked to agree with one of the two statements given at the end of the story. A choice of the first statement would indicate a lack of the sense of consideration for the rights and feelings of others, while a choice of the second statement would be considered as showing the possession of this attitude.

The teachers of the classes tested were asked to evaluate the children in each of the three features of responsibility and in each of the two features of cooperation (Appendix D). In each of these five features the children were to be rated as "above average", "average", or "below average", the following abbreviations to be used throughout the tables: AA for "above average", A for "average", and BA for "below average".

CHAPTER V

THE DISTRIBUTION OF EVIDENCE

A complete compilation of the results of the testing program is given in Tables XIV and XV (Appendices E AND F). In sub-test I, the result is shown as a score. A point was given if the child circled a "yes" or a "no" in response to a statement according to the criteria established by the writer. Such responses were considered "correct". The same is true of sub-test II, but here the results are shown in tabular form. Where an "x" occurs the child has answered "correctly". In sub-test III, an "x" under the number of the questions shows which question the child chose as his answer or response. In sub-test IV, the "x" indicates that the child answered by writing in the acceptable statement, and a blank indicates that he wrote in an unacceptable statement. In sub-test V, an "x" under the numbers 1, 2, or 3, indicates which of the three statements he chose. In sub-test VI, the "x" under the numbers 1, 2, or 3, shows that he made the acceptable choice of the two statements and the blank indicates that he made an unacceptable choice. In sub-test VII, an "x" under the numbers 1 or 2 indicates which of the two statements he chose, the number two statement being the acceptable one.

TABLE I. - THE DISTRIBUTION OF RESPONSES TO THE SIX QUESTIONS IN SUB-TEST II, EXPRESSED IN PERCENTAGES

	Grade 4		Grade 5		Grade 6		Total	
	Yes	No	Yes	No	Yes	No	Yes	No
1. Should the mouse and the rabbit have sent the squirrel away?	62.05	47.95	65.75	35.25	67.12	32.88	61.64	38.36
2. Should the squirrel have told the excuses he did?	20.55	79.45	6.85	93.15	12.33	87.67	13.25	86.75
3. Should the squirrel have been sent out for food again?	47.94	52.06	52.05	47.95	50.68	49.32	50.22	49.78
4. Was the squirrel right to have told about the fox and dog?	5.48	94.52	4.11	95.89	2.74	97.26	4.11	95.89
5. Should the squirrel have played with the chipmunk?	8.22	91.78	2.74	97.26	5.48	94.52	5.48	94.52
6. Should the squirrel have left the mouse and rabbit?	41.09	58.91	52.05	47.95	56.16	43.84	49.77	50.23

Note: The underlined percentages are considered as "correct" responses.

TABLE II. - THE TEACHERS' EVALUATION OF THE PUPILS TAKING THE TEST IN THE THREE FEATURES OF RESPONSIBILITY AND THE TWO FEATURES OF COOPERATION

		Responsibility						Cooperation			
		Completion of a task		Honesty		Consequence of action		Sharing		Rights and feelings	
		No.	%	No.	%	No.	%	No.	%	No.	%
Above Average	Gr. 4	30	41.09	32	43.83	25	34.24	30	41.09	30	41.09
	Gr. 5	22	30.13	21	28.76	16	21.91	26	35.61	28	38.35
	Gr. 6	25	34.24	21	28.76	19	26.02	20	27.39	29	39.72
	all grades	77	35.15	74	33.74	60	27.39	76	34.70	87	39.72
Average	Gr. 4	28	38.35	37	50.68	40	54.79	37	50.68	34	46.57
	Gr. 5	32	43.83	50	68.49	52	71.23	38	52.05	40	54.79
	Gr. 6	28	38.35	42	57.53	43	58.90	41	65.16	34	46.57
	all grades	88	40.18	129	58.90	135	61.64	116	52.96	108	49.31
Below Average	Gr. 4	15	20.24	4	5.47	8	10.95	6	8.21	9	12.32
	Gr. 5	19	26.02	2	2.74	5	6.84	9	12.32	5	6.84
	Gr. 6	20	27.39	10	13.69	11	15.06	12	16.43	10	13.69
	all grades	54	24.65	16	7.30	24	10.95	27	12.32	24	10.95

Responsibility, Sub-test II. TABLE I shows the percentage of pupils in grades four, five, and six, answering "yes" or "no" and also the total for these grades. It will be seen that questions 2, 4, and 5, gave the most clear-cut results while questions 1, 3, and 6, gave results approaching an even division. An average of the percentages for the total in questions 2 and 4, representing those who answered "no" is 8.68 per cent which is a little higher than the percentage, 7.30 per cent, for the total rated as below average by the teachers in TABLE II. The average of the percentages for those who answered "no" in the case of question 3, and "yes" in the case of question 5, for the total population is 27.63 per cent, which is slightly higher than the 24.65 per cent given in TABLE II as the teachers' evaluation for the below average group. The average of the percentages for those who answered "no" to question 1 and 6 for the total population is 44.29 per cent, which is considerably higher than 10.95 per cent, the teachers' evaluation for the below average group. This discrepancy may be due to the fact that considerably more pupils answered neither question 1 nor 6, than in the case of questions 2 and 4, and 3 and 5. Since these unmarked questions were included in the totals of the "no" answers for questions 1 and 6, the percentage was raised considerably. The above comparisons are made on the assumption that the numbers giving unacceptable responses to the six questions would be equivalent to the numbers that would be rated as below average by the teachers. Tentatively, it might be stated that this sub-test gives an indication of agreeing with the teachers' evaluation as

far as two features of responsibility are concerned; that is, honesty and completion of a task.

Since the questions asked at the end of the story are in pairs it seemed worth while to consider whether there were any important considerations arising from the way that they were answered. TABLE XVI (Appendix G) shows the extent of the population tested, both by grade and by total, who responded in the four possible ways of answering the questions when grouped in pairs. The figures indicate the number who answered "correctly;" pupils who did not mark anything are counted as answering neither question. The figures suggest that questions 1 and 6 presented the most trouble to the pupils, and the writer suspects that if the child could not decide how to answer he didn't mark the question. Questions 3 and 5 seemed to give trouble although to a lesser degree, while questions 2 and 4 presented the least difficulty. It could be argued that questions 1 and 6 were perhaps not so well worded as the other questions, and the mention of the mouse and rabbit may have brought forth sympathy for the squirrel to a greater degree than in the other questions.

TABLE III - THE DISTRIBUTION OF RESPONSES FOR SUB-TEST V

	Grade 4	Grade 5	Grade 6	Total
1. Go to Farmer Brown's and eat eggs	6	2	1	9
2. Go across the brook and catch mice.	65	71	72	208
3. Sit outside and wait, and then tell mother I could not find any mice.	2	0	0	2

Responsibility Sub-test V. TABLE III shows the number of pupils in each of the grades choosing each of the statements. Only 11 pupils failed to select the second statement as their answer. This number is not large enough to make the test a significant one. It was the conclusion of the writer that the statements would need to be completely revised in order to make such a test effective. The addition of more statements acting as foils would probably obtain better results.

TABLE IV. - THE DISTRIBUTION OF RESPONSES FOR SUB-TEST VI

	Grade 4	Grade 5	Grade 6	Total
1. Tell mother you had spent the twenty-five cents and that you wanted money to go to the show.	23	8	16	47
2. Believe that now you couldn't go to the show and that you would have to stay home that night.	50	65	57	172
1. Say nothing to anyone and keep it for yourself.	10	2	1	13
2. Go over to your friend's house and return it.	63	71	72	206
1. Leave the baby sleeping and go to the party, since the Browns would be home soon.	10	5	2	17
2. Forget about the party and stay with the baby until the Browns came home.	63	68	71	202

Responsibility Sub-test VI. The results tabulated in TABLE IV show the number of pupils choosing each of the statements for the three parts of the test. If it is assumed that those choosing the first statement in each case would correspond to the number that were rated as below average by the teachers, comparisons could be made as follows: The percentage choosing statement 1 in paragraph 1 is 21.46 per cent, for paragraph 2 is 5.93 per cent and for paragraph 3 is 7.76 per cent. The corresponding percentages for the below average ratings by the teachers are 10.95 per cent, 7.30 per cent and 24.65 per cent. Only in the second paragraph is there any similarity, i.e., the honest feature. However, it was thought that the test showed possibilities and would probably have been more effective if there had been additional statements from which to choose.

TABLE V. - THE DISTRIBUTION OF RESPONSES FOR THE 25 ESSENTIAL STATEMENTS IN SUB-TEST I, EXPRESSED IN PERCENTAGE

Statement	Grade 4		Grade 5		Grade 6		Total	
	Yes	No	Yes	No	Yes	No	Yes	No
3.	95.89	4.11	98.63	1.37	95.89	4.11	96.80	3.20
6.	79.45	20.55	97.26	2.74	95.89	4.11	90.86	9.14
9.	42.47	57.53	15.07	84.93	36.99	64.01	31.51	68.49
11.	84.93	15.07	97.26	2.74	93.15	6.85	91.78	8.22
12.	60.27	39.73	60.27	39.73	60.27	39.73	60.27	39.73
14.	4.11	95.89	1.37	98.63	1.37	98.63	2.29	97.71
16.	49.32	50.68	35.62	64.38	72.60	27.40	52.52	47.48
17.	75.34	24.66	95.89	4.11	86.30	13.70	85.84	14.16
18.	80.82	19.18	97.26	2.74	94.52	5.48	90.86	9.14
19.	78.08	21.92	86.30	13.70	80.82	19.18	81.73	18.27
20.	19.18	80.82	20.55	79.45	41.10	58.90	26.95	73.05
21.	71.23	28.77	72.60	27.40	79.45	20.55	74.42	25.58
23.	82.19	17.81	91.78	8.22	83.56	16.44	85.84	14.16
24.	86.30	13.70	98.63	1.37	95.89	4.11	93.60	6.40
25.	23.29	76.71	12.33	87.67	9.59	90.41	15.07	84.93
26.	89.04	10.96	97.26	2.74	95.89	4.11	94.06	5.94
30.	13.70	86.30	2.74	97.26	2.74	97.26	6.40	93.60
31.	46.57	53.43	26.03	73.97	43.84	56.16	38.82	61.18
35.	89.04	10.96	97.26	2.74	98.63	1.37	94.97	5.03
38.	34.25	65.75	20.55	79.45	20.55	79.45	25.12	74.88
39.	84.93	15.07	98.63	1.37	86.30	13.70	89.95	10.05
41.	26.03	73.97	9.59	90.41	13.70	86.30	16.44	83.56
43.	31.51	68.49	17.81	82.19	31.51	68.49	26.95	73.05
46.	35.62	64.38	21.92	78.08	27.40	72.60	28.32	71.68
50.	41.10	58.90	31.51	68.49	30.14	69.86	34.25	65.75

Note: 1. See also Appendix C, sub-test 1, for key to numbered statements. 2. The underlined percentages are considered as correct responses.

Cooperation Sub-test I. In TABLE V the 25 essential statements and the responses of the pupils are given. The results are expressed as percentages of those answering "yes" or "no" for each statement and the response that is considered acceptable is underlined. It is doubtful if statements such as 3, 14, and 35, add much to the total, but they might be retained as cover. There is considerable variation of opinion among the grades although statement 12 is uniform for all grades. There is more agreement between grades five and six than between grade four and the other two grades as is shown by statements 6, 18, 26, 38, and 50. That expressing a statement in a negative or positive way changed the response is illustrated by comparing statements 18 and 38, and 21 and 31. The negative form has a tendency to lower the percentage of those answering in an acceptable way. Further experimentation would be needed to determine if expressing the statements in a positive way is the better method, although this test would seem to suggest that this is so.

TABLE XVII (Appendix H) shows the distribution of scores on the test. The grade four pupils had a wider range of scores than those in the other two grades. The scores for grade five show a greater number in the higher ranges than is the case in grade four or grade six. Thirty-eight pupils in grade five had a score of 21 or better as compared with 23 for grade four and 26 for grade six. The distribution of scores for the total population seems fairly normal.

On the whole this test was quite encouraging as indicating a technique with which to test for the attitude of cooperation.

TABLE VI. - THE DISTRIBUTION OF RESPONSES FOR SUB-TEST III

	Grade 4	Grade 5	Grade 6	Total
1. Tell Mrs. Chipmunk you were sorry but you did not have enough nuts to give her some.	12	6	4	22
2. Give Mrs. Chipmunk some nuts and try to get along with less.	61	67	69	197

. . . . . .

TABLE VII. - THE DISTRIBUTION OF RESPONSES FOR SUB-TEST IV

		Grade 4	Grade 5	Grade 6	Total
First picture	Acceptable	45	52	58	155
	Not acceptable	28	21	15	64
Second picture	Acceptable	62	69	66	197
	Not acceptable	11	4	7	22
Third picture	Acceptable	55	62	61	178
	Not acceptable	18	11	12	41

Cooperation Sub-test III. The distribution of answers to the two statements in this test are given in TABLE VI. There is fair uniformity in the way the test was responded to among the three grades but this does not indicate that there is much merit in the test in its present form in differentiating between the subject having or not having a feeling of sharing. The writer feels that perhaps the situation is a little too obvious and that a greater degree of subtlety should be introduced into the test. This might be accomplished either by altering the story or by devising a new set of statements. This test shows the same weakness as sub-test V, but to a lesser degree.

Cooperation Sub-test IV. TABLE VII shows the distribution of acceptable and non-acceptable responses to the test. The results indicate that the technique used in this test gives promise of being a fairly effective method of revealing the possession or non-possession of the attitude of cooperation as it applies to the two features of sharing and the rights-and-feelings of others. From evidence gained through observation during the administration of the test, the writer feels that improvement in the test could be brought about by clarifying and simplifying the directions preceding the test, especially for the benefit of the grade four pupils. Again, as in sub-test III, greater uniformity in the response is evident between grades five and six than between grade four and the other two grades. This discrepancy, however, may be a natural outcome due to the immaturity of grade four pupils, and is not great enough to be a decisive factor. It seems indeed to be a common characteristic of all the sub-tests.

TABLE VIII. - THE DISTRIBUTION OF RESPONSES FOR SUB-TEST VII

	Grade 4	Grade 5	Grade 6	Total
1. Since Woody was not hurting the rabbits I don't see why they thought he was a mean fellow.	16	9	9	34
2. Woody was not doing the right thing because he was not thinking of how the rabbits felt about it.	51	64	64	179
3. No answer given	6			6

Cooperation Sub-test VII. The results of this test, which is concerned with the rights-and-feelings-of-others feature of cooperation, are given in TABLE VIII. This test seemed about as effective as sub-test III in detecting this feature of cooperation. The writer is inclined to believe that the six pupils who did not give an answer in grade four were probably poor readers who lost interest in the test by the time they got that far. It hardly seems likely that it would be a case of not knowing what to do or how to answer. If the number giving the unacceptable answer for the total population may be considered as corresponding to the below average group in the teachers' evaluation, 15.52 per cent as compared to 12.32 per cent, then this test could be considered as having merit and fairly good possibilities.

CHAPTER VI

COMPARATIVE EVIDENCE

Before presenting the statistical data, it should be pointed out that the test provides very few items with which to compute coefficients of reliability and validity. However, by using the 2x2 fold table,[26] the coefficient provided a measure of correlation for certain items. This method was used for the items in sub-tests II, VI, and III, IV, and VII. Sub-test V was not used in any of the calculations. The same method was also used in correlating various items and parts of the test with the teachers' evaluations. Sub-test I contains 25 items, and it was possible to compute a reliability coefficient for it by using an approximation formula as given by Garrett.[27]

In calculating the validity of the test, t-values were computed by the Kuder-Richardson method. Other aspects of the test mentioned in this chapter are dealt with by reference to the tables in Chapter V and from observations made at the time the test was administered.

In making the statistical analysis, the line of reasoning followed is illustrated through the following questions: How

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[26]H. E. Garrett, Statistics in Psychology and Education, New York, Longmans, Green & Co., 1953, p. 367.

[27]Ibid., p. 336.

discriminating are the teachers' opinions? Is there any evidence of validity in the test as made? How can the test be improved by (a) the interrelation of items and (b) by deciding which items should be retained? How statistically good is the improved test, provided items are dropped? How good is the range and level of the test? How acceptable is the test? What would be a better test?

How discriminating are the teachers' opinions? The figures in TABLE II show the percentage of pupils who were rated as above average, average and below average in the three features of responsibility and the two features of cooperation. The opinions of the teachers seem quite decisive in rating the children as below average, while the ratings of average and above average indicate a greater degree of indecision. In general, the opinions of the teachers become more definite in grades five and six than in grade four for these latter ratings, due, probably, to the fact that the manifestation of an attitude is more easily discernable in older children. In addition, it is possible that teachers expect more of older children and are more demanding in their expectations. Consequently, their rating of older children would be more definite as to whether the child were exhibiting behaviour patterns characteristic of the attitude. The feature of honesty in responsibility yields the smallest percentage in the below average rating for the total population, from which it might be inferred that this aspect of responsibility is rated more objectively than the others. This

element of objectivity may also explain the greater spread shown between the above average and average ratings for the consequence-of-action feature than in the completion-of-a-task feature. There also seems to be less spread between these two ratings in the features of cooperation than in the features of responsibility. As would be expected, the largest percentage of the pupils are rated as average, the next largest as above average and the smallest percentage as below average. However, no difinite pattern seems to emerge other than the fact that the figures suggest that possibly there is a carry-over from responsibility to cooperation in rating pupils. This carry-over may result from the halo effect which was mentioned in Chapter III.

In setting up a 2x2 fold table to correlate the teachers' evaluation in responsibility with their evaluation in cooperation, a value of 1 was given the below average rating, a value of 2 for the average rating and a value of 3 for the above average rating. The following results were obtained using the formula:

$$\phi = \frac{ad - bc}{\sqrt{pqp'q'}}$$

$$\phi = .500$$

This phi-coefficient value of .500 is well beyond the 1 per cent level of confidence[28] and would tend to substantiate

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[28] H. E. Garrett, Statistics in Psychology and Education, op. cit. p. 437.

the earlier observation that there is a carry-over from one attitude to the other when evaluating is done. In other words, a pupil who is rated high in responsibility will very likely be so rated in cooperation and vice versa. A phi-coefficient of .093 (Appendix J) was obtained when the combined scores of the tests on cooperation were correlated with the combined scores of the tests on responsibility, which indicates that pupils who score high in cooperation do not also score high in responsibility. The element of carry-over does not seem to apply in the case of test results.

Is there any evidence of validity in the test as made? In calculating the t-value (Appendix I) the items for responsibility and cooperation were dealt with separately. For responsibility, sub-tests II and VI contain 9 scoring items, and the combined scores obtained on these two tests were divided into high scores (8 and over) and low scores (7 or under), the mean of the scores being 7.06. The corresponding ratings of the teachers for the high scores and the low scores were tabulated and the t-value computed according to the formula:

$$\acute{6} = \frac{1}{N}\sqrt{N(X^2) - (X)^2}$$

$$\acute{6}_{M_1} = \frac{\acute{6}}{\sqrt{N - 1}}$$

$$\acute{6}_{dM} = \sqrt{(\acute{6}M_1)^2 + (\acute{6}M_2)^2}$$

$$t = \frac{M_1 - M_2}{\acute{6}dM}$$

continued

$$t = .930$$

The value, t = .930,* fails to reach a 10 per cent level of confidence,[29] and it would seem that these two tests for responsibility do not indicate a significant degree of validity.

For cooperation, sub-tests III, IV, and VII contain five scoring items, and the combined scores obtained on these three tests were divided into high scores (5 and above) and low scores (4 and below), the mean of the scores being 4.13. The corresponding ratings by the teachers for the high scores and the low scores were tabulated and the t-value computed according to the previous formula.

$$t = 1.025$$

Again, the value obtained fails to reach the 10 per cent level of confidence, and as in the case of the tests for responsibility, these three tests for cooperation do not indicate a significant degree of validity.

For cooperation, sub-test I contains 25 items and the common base score of 11 was subtracted from the scores to reduce

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* For 200 degrees of freedom (219 cases in the study), the t-value at the 10 per cent level of confidence is 1.65, and at the 5 per cent level is 1.97.

[29] H. E. Garrett, Statistics in Psychology and Education, p. 427.

the size of the scores for computation. The scores were divided into high scores (9 and above) and low scores (8 and below), the mean of the scores being 8.26. The corresponding ratings by the teachers for the high scores and the low scores were tabulated and the t-value computed.

$$t = 1.743$$

This value is above the 10 per cent level of confidence and would indicate that sub-test I possesses a fair degree of validity.

In the same way as described above, a t-value using the combined scores of sub-tests I, III, IV, and VII, was computed.

$$t = 1.362$$

According to this value, those sub-tests that deal with cooperation exhibit a degree of validity which, although not significant, is encouraging.

The results of the computations for t-values are tabulated in TABLE IX. Sub-test I, with 25 items, produces a t-value above the 10 per cent level of confidence, while sub-tests III, IV, and VII, with only 5 items produce a t-value below the 10 per cent level of confidence. Combining sub-test I with III, IV, and VII, raises the t-value, as would be expected, but not enough to place it within the 10 per cent level of confidence. It might be concluded that there is significant validity for sub-test I, but not for sub-tests III, IV, and VII.

The t-value for sub-tests II and VI for responsibility indicates less validity than in the cases for cooperation, even though these two tests contain 9 items, 4 more than in the tests for cooperation.

How can the test be improved? By calculating the phi-coefficients, the correlation of items was determined for (1) responsibility and (2) cooperation. The results are set forth in TABLE X. Details of the computations are given in Appendix J. For 200 degrees of freedom the correlation coefficient values at the 5 per cent and the 1 per cent levels of confidence are .138 and .181 respectively.[30]

The interrelation of items: From an examination of TABLE X it will be seen that items 1 and 6 of sub-test II are related beyond the 1 per cent level of confidence, but separately neither of these items is significantly related to item 1 of sub-test VI, which is assumed to have logical relationship. Similarly, items 2 and 4 of sub-test II have a relation beyond the 1 per cent level of confidence, but independently neither of them shows a significant relationship to item 2 of sub-test VI, which they are assumed to have. In the case of the third feature of responsibility, completion of a task, the two items 3 and 5 of sub-test II do not show significant relationship as might be expected, but item 3 of sub-test VI has a relationship beyond the 1 per cent level of confidence with one of these items;

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[30] H. E. Garrett, Statistics in Psychology and Education, p. 439.

TABLE IX. - THE t-VALUES OF THE TEACHERS' EVALUATION BASED ON HIGH SCORES - LOW SCORES DIVISION OF PUPILS' SCORES IN RESPONSIBILITY AND COOPERATION

	t-value*
1. Cooperation	
a. Sub-tests III, IV, and VII	1.025
b. Sub-test I	1.743
c. Sub-tests I, III, IV, and VII	1.362
2. Responsibility	
a. Sub-test II and VI	.930

* The t-value at the 10 per cent level of confidence is 1.65, and at the 5 per cent level is 1.97.

TABLE X. - THE CORRELATION OF ITEMS IN THE FEATURES OF (1) RESPONSIBILITY AND (2) COOPERATION BY CALCULATING THE PHI-COEFFICIENTS.

	ø *
1. Responsibility	
a. Phase 1 - Consequence of action	
Sub-test II, item 1: Sub-test II, item 6	.400
Sub-test II, item 1: Sub-test VI, item 1	.085
Sub-test II, item 6: Sub-test VI, item 1	.102
b. Phase 2 - Honesty	
Sub-test II, item 2: Sub-test II, item 4	.304
Sub-test II, item 2: Sub-test VI, item 2	.122
Sub-test II, item 4: Sub-test VI, item 2	.042
c. Phase 3 - Completion of a task	
Sub-test II, item 3: Sub-test II, item 5	.083
Sub-test II, item 3: Sub-test VI, item 3	.017
Sub-test II, item 5: Sub-test VI, item 3	.230

/continued

* For 200 degrees of freedom the correlation coefficient values at the 5 per cent and the 1 per cent levels of confidence are .138 and .181 respectively.

TABLE X. - THE CORRELATION OF ITEMS IN THE FEATURES OF (1) RESPONSIBILITY AND (2) COOPERATION BY CALCULATING THE PHI-COEFFICIENTS

continued:

	ø
2. Cooperation	
a. Phase 1 - Sharing	
Sub-test III, item 2: Sub-test IV, item 2	.069
b. Phase 2 - Rights and feelings of others	
Sub-test IV, item 1: Sub-test IV, item 3	.353
Sub-test IV, item 1: Sub-test VII, item 2	.126
Sub-test IV, item 3: Sub-test VII, item 2	.198

namely, item 5 of sub-test II. It is possible that the items in sub-test VI are separate aspects of the consequence-of-action category and the honesty category, and are additive in their effect. In the case of the completion-of-a-task category, item 3 of sub-test II would be the additive factor.

In order to determine if this additive characteristic exists, correlations with the teachers' evaluations were calculated on these items. The results are given in TABLE XI. Evidence in support of this additive effect is found in the categories of consequence-of-action and completion-of-a-task, whereby the phi-coefficient value is raised by the addition of item 1, sub-test VI, and item 3, sub-test II, to each of these categories respectively. However, in the category of honesty, evidence in support of the additive characteristic is lacking, since the phi-coefficient value is lowered by the addition of item 2, sub-test VI. It will be noted that the additive effect is greatest for the category consequence-of-action, hardly significant for completion-of-a-task and negative for honesty.

Referring to TABLE X, there appears to be no significant relationship of the items in the category of sharing for cooperation. There is, however, excellent relationship in the category of the rights-and-feelings-of-others, and it must be concluded that this category exhibits the greatest degree of unity. In the former category the phi-coefficient value is well below the 5 per cent level of confidence. In the latter category, only item 1, sub-test IV: item 2, sub-test VII, shows a relationship below the 1 per cent level of confidence.

TABLE XI. - THE CORRELATION OF ITEMS IN THE FEATURES OF RESPONSIBILITY AND THE TEACHERS' EVALUATION IN THESE FEATURES

Responsibility	ø
a. Phase 1 - Consequence of action	
Score 1 - Sub-test II, item 1 and Sub-test II, item 6 with teachers' evaluation	.036
Score 2 - Sub-test II, item 1: Sub-test II, item 6 and Sub-test VI, item 1 with teachers' evaluation	.082
b. Phase 2 - Honesty	
Score 1 - Sub-test II, item 2 and Sub-test II, item 4 with teachers' evaluation	.023
Score 2 - Sub-test II, item 2; Sub-test II, item 4 and Sub-test VI, item 2 with teachers' evaluation	.013
c. Phase 3 - Completion of a task	
Score 1 - Sub-test II, item 5 and Sub-test VI, item 3 with teachers' evaluation	.133
Score 2 - Sub-test II, item 5; Sub-test VI, item 3 and Sub-test II, item 3 with teachers' evaluation	.138

In the case of sub-tests II and VI, it will be seen that for the consequence of action feature, items 1 and 6 of sub-test II show a fair degree of unity with item 1 of sub-test VI having an additive effect. For the completion-of-a-task feature the same type of relationship exists among the items of the two sub-tests, but to a lesser degree. Unity was seen to exist between items of each test rather than between items of the same test with the remaining item having an additive effect. The honesty feature shows unity of items within the same test, as in the case of the consequence-of-action feature, but the third item does not have an additive effect.

Further relationships between various items and parts of the test with the teachers' evaluations were determined by computing phi-coefficients of correlation as is shown in TABLE XII.

There exists a relationship well above the 1 per cent level of confidence between the teachers' evaluation in responsibility and the teachers' evaluation in cooperation. This bears out an earlier observation that there is a carry-over from assessment in responsibility to cooperation on the part of the teachers doing the evaluations or that these two attitudes really go together.

The categories that reach or exceed the 1 per cent level of confidence in their relationship with the teachers' evaluation are (1) rights and feelings of others and (2) completion of a task. The other categories do not show statistical

TABLE XII. - THE CORRELATION OF VARIOUS ITEMS AND PARTS OF THE TEST WITH THE TEACHERS' EVALUATIONS, BY COMPUTING THE PHI-COEFFICIENTS

Items correlated	Ø coeff.
1. Sharing and rights and feelings of others - sub-test I with teachers' evaluation, phases 1 and 2	.040
2. Sharing - Sub-test III, item 2 and Sub-test IV, item 2 with teachers' evaluation, phase 1	.016
3. Rights and feelings of others - Sub-test IV, item 1 and Sub-test IV, item 3 and Sub-test VII, item 2 with teachers' evaluation, phase 2	.180
4. Cooperation, total score- Sub-tests I, III, IV, and VII with teachers' evaluation, phases 1 and 2	.003
5. Consequence of action - Sub-test II, item 1 and Sub-test II, item 6 and Sub-test VI, item 1 with teachers' evaluation, phase 1	.082
6. Honesty - Sub-test II, item 2 and Sub-test II, item 4 and Sub-test VI, item 2 with teachers' evaluation, phase 2	.013
7. Completion of a task - Sub-test II, item 3 and Sub-test II, item 5 and Sub-test VI, item 3 with teachers' evaluation, phase 3	.138
8. Responsibility, total score - Sub-tests II and VI with teachers' evaluation, phases 1, 2, and 3	.078
9. Teachers' evaluation - Phases 1, 2, and 3 of responsibility with Phases 1 and 2 of cooperation	.500

significance in their relationship with the teachers' evaluation.

The significant relationship suggests to the writer that predominant in the minds of the teachers may be an interpretation of these two attitudes limited to one feature. The attitude of cooperation may be interpreted as the child's consideration for the rights and feelings of others, and the attitude of responsibility may be interpreted as the child's ability and success in completing a task. Consequently, in their evaluation the teachers will be influenced by their concept of these attitudes regardless of what feature they are evaluating. This may be one of the key issues in the problem of evaluation.

Which items should be retained?

a. Items that make the most valid sub-score. On the basis of the results in TABLE X, items that achieve the most valid sub-score in the category consequence of action are items 1 and 6 of sub-test II, and the retention of item 1 of sub-test VI could be justified on the basis of its additive effect, as is shown in TABLE XI. Items that achieve the most valid sub-score in the category of honesty are items 2 and 4 of sub-test II, and the retention of item 2 of sub-test VI is doubtful on the grounds that it has no significant relationship with the other two items and does not produce an additive effect. Items that achieve the most valid sub-score in the category completion of a task are item 5 of sub-test II and item 3 of sub-test VI. The retention of item 3 of sub-test II may be justified on the basis of its relationship with item 5 of the same sub-test rather than upon its relationship

with item 3 of sub-test VI, the former relationship being high enough to warrant usage, whereas the latter is not.

In the category of sharing it is doubtful if item 2 of sub-test III contributes to a valid sub-score in this category. However, considering the high relationship that exists between the items in sub-test IV, the item of this test that is concerned with sharing, i.e., item 2 of sub-test IV, could be justifiably retained and considered as contributing to a valid sub-score. In the category of the rights and feelings of others, items 1 and 3 of sub-test IV, and item 2 of sub-test VII, show high relationship with one another and should be retained as contributing substantially to a valid sub-score.

The retention of sub-test 1, which has 25 items, can be justified on the grounds that it has a reliability correlation of .618, which was calculated according to the following formula:[31]

$$r_{11} = \frac{n\sigma^2_t - M(n-M)}{\sigma^2_t (n-1)}$$

in which

r_{11} = reliability of the whole test

n = number of items in the test = 25

σ_t = SD of the test scores = 3.26

M = the mean of the test scores = 19.44

r_{11} = .618

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[31] H. E. Garrett, Statistics in Psychology and Education, p. 336.

Further justification for the retention of this sub-test is obtained from the t-value of 1.743, TABLE IX, which indicates a fair degree of validity. It may be that this sub-test is not truly projective and the pupil simply may or may not be conforming to the opinion expressed in the statement. On the other hand, the test may elicit a true response thus reinstating it as a projective medium.

b. Items that relate to the over-all score. From the relationship of various categories of the test to the teachers' evaluation expressed in TABLE XII it would seem that items 1 and 3 of sub-test VII would contribute considerably to the over-all score. The same could be said of items 3 and 5 of sub-test II and item 3 of sub-test VI. Although sub-test 1 does not show a significant relationship with the teachers' evaluation, with significant correlations in reliabulity and validity, it also would relate to an over-all score. It is doubtful if sub-test III or sub-test V would have any significant relation to the over-all score. Although the categories of consequence of action and honesty have a phi-coefficient value of .082 and .013 respectively when correlated with the teachers' evaluation in these categories, the phi-coefficient value of .078 for all of the categories for responsibility indicates that there is some degree of relation of items 1 and 6, and 2 and 4, of sub-test II; and items 1 and 3 of sub-test VI, to the over-all score.

The test would probably be improved with the elimination of sub-test III and sub-test V. Since the latter test has not entered into any of the calculations, the tests for responsibility, i.e. sub-tests II and VI, would remain the same, but in the

TABLE XIII. - THE t-VALUE OF THE TEACHERS' EVALUATIONS BASED ON HIGH SCORES - LOW SCORES DIVISION OF PUPILS' SCORES IN RESPONSIBILITY AND COOPERATION.

	t-value *
1. Cooperation Sub-tests I, IV, and VII	1.680
2. Responsibility Sub-tests II and VI	.930

* The t-value at the 10 per cent level of confidence is 1.65, and at the 5 per cent level is 1.97.

case of cooperation, sub-tests I, IV, and VII, would at least be retained for this attitude.

How statistically good is the improved test?

In calculating the validity of the revised test, the t-value for responsibility will remain the same. For cooperation the scores for sub-tests I, IV, and VII, were combined and divided into high scores (12 and above) and low scores (11 or below), the mean of the scores being 11.5. The corresponding ratings of the teachers were tabulated and the t-value computed.

$$t = 1.680$$

The t-value for the improved test is given in TABLE XIII. The elimination of sub-test III improves the validity of the test for cooperation by raising the t-value from 1.362 to 1.680 and places it within the 10 per cent level of confidence.

How good is the range and level of the test?

The whole test. From observation it was noted that the time taken to do the test ranged from 10 to 45 minutes, depending upon the reading ability of the pupils. There did not seem to be any appreciable difference in completion-time from grade to grade, those in grade four doing it as quickly as those in grade six. Again, from observation, there seemed to be no outstanding difficulty on the part of the pupils to proceed through the test after reading the instructions on the title page.

Sub-test I. TABLE V shows the percentages of the pupils in each grade answering the significant statements as "yes" or "no". There is sufficient uniformity throughout the grades to support the conclusion that the understanding of this test is well within the capabilities of pupils of these grade levels. Some of the items such as 3 and 14 and 35 probably do not add much to the total, but they may be retained to act as cover. TABLE IX indicates the range of scores obtained on the test, and shows a fair amount of consistency among the grades, and also indicates a rather normal range of scores for the total number of cases tested.

Sub-test II. TABLE I shows in percentages the distribution of answers of the six questions in sub-test II, and the consistency through the grades indicates that it is as much within the abilities of grade four as within those of grade six pupils. TABLE XVI, Appendix G, shows the distribution of responses to the four possible ways of answering each pair of questions in sub-test II, for each grade and for the total cases. The range of the distribution in each of the grades shows a fair amount of consistency for each of the four categories of the paired questions.

Sub-test III. TABLE VI gives a tabulation of the numbers answering each statement in the test and shows a greater correspondence between grades five and six than between grade four and the other two grades. However, the discrepancy is probably not great enough to discredit the use of the test on the grounds that it is not at the grade four level.

Sub-test IV. From the tabulation of results in TABLE VII of this test, showing the number that answered "acceptably" and "unacceptably", and showing too the evident improvement for the second and third pictures, the writer is inclined to conclude that the difference in the format of this test from that of the ones preceding it may account for such results. The inherent unfavourable condition might be improved by revising the directions at the beginning of the test. However, the over-all results would indicate that this test is within the abilities of the pupils of grades four, five, and six.

Sub-test V. In TABLE III are shown the numbers choosing each of the three statements to answer test V, and there seems to be little doubt that it is at the age-level and grade-level of the pupils. This test was discarded in all of the calculations because it was felt that the right response was too obvious. As the results show, very few cases chose a statement other than the acceptable one. The addition or subtraction of one score for 208 cases out of 219 would have very little effect on the analysis carried out.

Sub-test VI. In TABLE IV are shown the numbers choosing each of the statements in response to the three paragraphs in sub-test VI. The results indicate that this test is within the capabilities of the pupils and it is possible that the more mature pupils in grade six differentiated more easily between a "true answer" and an "expected answer".

Sub-test VII. The results of this test are shown in TABLE VIII and indicate a fair amount of consistency; it is suspected that in the six cases where no answer was given, it was a case of the poor readers in grade four becoming a little tired.

As far as the range and level of the test is concerned, it will be seen that the pupils of grades four, five, and six, who took the test, found it suitable to their understanding and ability. The amount of reading required may have presented a slight obstacle to the poor readers in each of the grades.

How acceptable is the test? As far as could be determined by observation, the pupils taking the test seemed to enjoy doing it, and it is estimated that about 75 per cent finished within a twenty-minute period. Since the test involves a considerable amount of reading, the poor readers were inclined to become tired near the end, but there were no reports of "balking" or non-acceptance of the complete test. On questioning a sampling of pupils, it was learned that they found the test "easy" and "fun to do".

What would be a better test? Improvement in the test, in the opinion of the writer, would involve the following characteristics:

1. Increasing the number of items in each of the sub-tests, with the exception of sub-test I, which seems satisfactory in that regard.

2. Shortening and improving the test by elimination

of sub-test III and V.

3. Improving the directions preceding each sub-test.

4. The position of the sub-tests that require more reading should be considered. It might be more successful if they were at the beginning, so that the poor readers would not be too tired to do them. On the other hand this might provide an obstacle at the start which would discourage them from completing the rest of the test. The placing of the sub-tests in suitable positions within the test as a whole would need to receive careful consideration.

5. It was felt that certain of the sub-tests achieved their purpose better than others. It is suggested that sub-tests I, II, IV, and VII, would be so classed and that material of the type contained in these tests might work best in testing for attitudes.

CHAPTER VII

CONCLUSIONS

In this study, the writer has presented a suggested means for testing the attitudes of responsibility and cooperation by a pencil-and-paper test containing seven sub-tests. In the construction of the test, modifications of the projective technique have been used. Experimentation has been directed, in the main, to the creation of a situation by means of the study form, either as an animal story, or as a real-life story which puts the reader in a make-believe situation. The balance of the test made use, in one case, of the picture form; and in the other case, of a questionnaire composed of statements written in the first person. These methods have been shown by the writer in an earlier chapter to be adaptations of techniques used in the field of attitude study, particularly as it applies to the social attitudes. The interpretation of "attitude" in this study has a restricted meaning, consistent with that given by the Department of Education of Alberta. Thus, in answer to the question "Could a modified form of the projective technique be used in these grades by means of a pencil-and-paper test?" which was asked in Chapter I, the evidence presented in the study seems to indicate an affirmative answer.

From the distribution of the responses of the pupils taking the test, it may be concluded that these two attitudes

are sufficiently well developed in children of this age and grade level that a positive or a negative reaction may be called forth indicative of "attitude" behaviour. A certain correspondence was shown to exist between the negative and positive reactions and the ratings or evaluations of the teachers, although the comparisons made have reference to the proportions of pupils, and not necessarily the same pupils, in these reactions.

In very few cases of the total tests administered were there instances of sub-tests not being completed. Further evidence of the acceptability of the test was obtained through observation during its administration. The children seemed to enjoy doing the test, although it should be mentioned that for the poor readers it was a little fatiguing.

It seemed fairly evident from the results of the testing, that certain of the sub-tests achieved their purpose better than others. In sub-tests which used the story method to create the situation, success in soliciting the desired reaction seemed to depend upon the degree of subtlety present in the story and the questions or statements following it. The writer feels that sub-test II and VII achieved this better than sub-tests III or V. It was also felt that the questionnaire method (Sub-test I) and the picture method (sub-test IV) were fairly satisfactory in bringing about the desired reaction. It is thought that tests similar to these four should be the basis for further experimentation.

The statistical analysis yielded results which were, in some cases, significant; and in others, if not significant, at

least encouraging. The tests for cooperation seemed to indicate more validity and reliability than those for responsibility. A satisfactory relationship between the teachers' evaluations and the results of the tests was indicative but not conclusive.

The question might be raised as to what would constitute the teachers' criteria in carrying out an evaluation for these two attitudes. It occurred to the writer that these criteria would probably differ for the several teachers who were asked to evaluate the pupils, and that this factor might account for the non-correlation of the evaluations with the test results. Consequently, the test may be better than indicated. It is also suggested that further investigation in this area might determine whether results from such a test would correlate with what the children actually do instead of what the teachers think they do.

The test presented in this study may be somewhat imperfect and the method not completely efficacious, but at least it is a probing into the area of attitude-testing in the restricted sense of the word. There is need for further investigation of attitude-study in terms of this restricted interpretation.

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APPENDICES

Appendix A FIRST TEST OF PILOT STUDY

In Smith School, in grade 5, the children in Miss Ray's class have a monitor system for doing jobs in the classroom. During one week it was Tom's turn to water the plants. On Tuesday Tom forgot to look after the plants and Miss Ray had to remind him of it on Wednesday. On Friday he again forgot to water the plants. The following week it was Jerry's turn as plant monitor. Wednesday morning he forgot to water the plants but in the afternoon he remembered and looked after them. On Friday he almost forgot again, but he did remember before school was dismissed.

1. Have you ever had a monitor job like these boys? Yes No
2. Were you like Tom or Jerry? Tom Jerry

Miss Ray's class was busy working in the enterprise period. Alice and May were the last ones to leave the library when recess came. After recess, Miss Ray said "The library looks very untidy. Would those who were there last please straighten it out?" May and several other children said that they were not there last. At last Alice got up and went to the library and straightened the books neatly on the shelves. Miss Ray thanked her when she sat down.

1. Have you ever been the last one to leave the library Yes No
2. Were you like May or Alice? May Alice

It had been raining hard all day. Large pools of water were on the ground as Jim and Bob came home from school. The boys wanted to wade through the water but they knew they would get their feet wet. Jim thought that he would wade across a pool anyway, but Bob decided that he would walk around it.

1. Have you ever been out on a day like that? Yes No
2. Were you like Jim or Bob? Jim Bob

Appendix B SECOND TEST OF PILOT STUDY

Mother gave Mary and Jean twenty cents on Saturday morning to go to the show. Jean kept thinking of some candy that she wanted to buy and after a while she decided to spend her twenty cents on that. When the time came to go to the show, Jean asked mother for some more money. Mother told her that since she had already spent the money for candy, she would have to stay home from the show. Mary, who had saved her money, went to the show alone.

1. Have you ever been given some money for a show and then spent it on something else? Yes No
2. Which one would you be like? Mary Jean

Miss Ray's class was busy working in the enterprise period. Many of the boys and girls were using the library. After the period was over, Miss Ray said, "The library books are very untidy. Would those who were using them please straighten them up?" May and several others did not go back but Alice and Gerald did, and tidied it up.

1. Have you ever used the class library in an enterprise period and not put the books back neatly? Yes No
2. Which one would you be like? May Alice Gerald

One week it was Tom and Jerry's turn to look after the blackboards in Miss Smith's class. On Tuesday, Jerry was thinking of a hockey meeting and forgot to help Tom. On Thursday he forgot again. Tom remembered to do the blackboards every day.

1. Have you ever had a turn at looking after the blackboards, and forgotten to clean them? Yes No
2. Which one would you be like? Tom Jerry

Appendix B (continued)

Once upon a time there lived together a rabbit, a mouse, and a squirrel. It was the squirrel's job to bring in the food. The mouse looked after the house and the rabbit ran errands.

One day when there was little food in the house and the squirrel was in the woods getting food, he met a chipmunk. The chipmunk asked him to play but the squirrel said, "No. I have a job to do gathering food." The chipmunk begged and begged and at last the squirrel said, "All right, but just for a little while."

They had such a good time it was very late before the squirrel thought, "Oh, my goodness, I must gather some food before it is too late!" He was so tired that he did not gather very much and came home with hardly enough for supper.

The rabbit and the mouse asked him why he had so little food. The squirrel answered, "Oh goodness! While I was gathering food a big fox came along and chased me up a tree. He stayed around hoping I would come down, but I didn't, and at last he got tired and went away, so I was only able to get a little food."

The rabbit and the mouse said that they were glad he had escaped from the fox, but that he would have to bring in the food next day or he could not live with them any more.

The next day the squirrel met the chipmunk again and at first refused to play. But the chipmunk begged so hard he finally said he would. He returned home that day with as little food as

Appendix B (continued)

before and told the rabbit and the mouse that this time he had been chased by a dog.

The mouse and the rabbit said that he would have to leave and so he sadly packed his belongings and went to live by himself in a hollow tree.

1. Do you feel sorry for the squirrel? Yes No
2. Were the squirrel's excuses good ones? Yes No
3. Did the rabbit and the mouse do the right thing? Yes No
4. Should the rabbit and the mouse have gone to gather food the second day? Yes No

Appendix C THE TEST THAT WAS ADMINISTERED TO GRADES FOUR, FIVE, AND SIX.

Sub-test I

Read each sentence and then draw a line under "Yes" if you think the sentence is true, and under "No" if you think the sentence is not true.

Yes	No	1.	I find lots of things to do on Saturday.
Yes	No	2.	I like going to shows.
Yes	No	3.	I like working at school with other boys and girls.
Yes	No	4.	I often go up town by myself.
Yes	No	5.	I sometimes feel lonely.
Yes	No	6.	I like doing what the group leader asks me to do in the enterprise periods.
Yes	No	7.	I have spending money every Saturday.
Yes	No	8.	I often help my mother around the house.
Yes	No	9.	When I am doing enterprise work, I don't care if I finish my work.
Yes	No	10.	I read a lot of books.
Yes	No	11.	I like the enterprise periods.
Yes	No	12.	I like working by myself in school.
Yes	No	13.	I like to go down town with mother and dad.
Yes	No	14.	I like to bother people who are working.
Yes	No	15.	I would rather play outside than sit at home.
Yes	No	16.	Sometimes I am not interested in enterprise work.
Yes	No	17.	I like helping other boys and girls when I have finished my enterprise work.
Yes	No	18.	I like working in groups in the enterprise periods.
Yes	No	19.	I like being a monitor.
Yes	No	20.	Sometimes I go around and bother other boys and girls who are working.
Yes	No	21.	I like to be a group leader.
Yes	No	22.	I go right home after school.
Yes	No	23.	I think I can get more work done when I work by myself.
Yes	No	24.	I like doing what the group leader tells me to do in the enterprise periods.
Yes	No	25.	I don't like enterprise periods because I have to work with someone.
Yes	No	26.	I like working with other boys and girls.
Yes	No	27.	I like to finish my work on time.
Yes	No	28.	I have fun at recess times.
Yes	No	29.	If I am not interested in what I am doing, I do not want to do it.
Yes	No	30.	I like bothering other boys and girls.
Yes	No	31.	I would not like to be a group leader.
Yes	No	32.	Sometimes I don't know what to do in school.
Yes	No	33.	I don't care if I finish my work.
Yes	No	34.	I like cowboy picture shows.

Appendix C (continued)

Yes	No	35.	I like enterprise periods.
Yes	No	36.	Sometimes I feel very sleepy in school.
Yes	No	37.	I have trouble with my school work.
Yes	No	38.	I would rather not work in a group with other boys and girls.
Yes	No	39.	When I am finished I try to help other boys and girls.
Yes	No	40.	I like going to Sunday School.
Yes	No	41.	I like to order the boys and girls around when I am group leader.
Yes	No	42.	I would rather watch someone else work than work myself.
Yes	No	43.	I never get to do what I want to do in the enterprise period.
Yes	No	44.	I go to the show every Saturday afternoon.
Yes	No	45.	Someone always bothers me when I am trying to do my work.
Yes	No	46.	I don't like to help anyone else in the group.
Yes	No	47.	I think it is silly to help around the house.
Yes	No	48.	Some boys and girls in my class do more work in the group than I do.
Yes	No	49.	I like enterprise periods because I don't have to work very hard.
Yes	No	50.	I don't like being in a group.

Sub-test II

First, read the story; then draw a circle around the word you think answers the questions.

Once upon a time there lived together a rabbit, a mouse, and a squirrel. The mouse looked after the house and the rabbit carried the wood and the water. The squirrel went out in the woods to get food whenever they needed it.

One day when the food was almost gone, the mouse said to the squirrel,

"I think you had better get us some food."

The squirrel went out in the woods and began to gather food. After a while he met a chipmunk. They talked for a few minutes, and then the chipmunk asked the squirrel to play with him.

"All right," said the squirrel.

They had such a good time the squirrel didn't get home until very late.

"Where is our food?" asked the mouse and the rabbit.

"Oh goodness!" said the squirrel, "while I was getting the food, a big fox came along and chased me up a tree. He stayed under the tree all day but at last he got tired and went away. I wasn't able to get any food."

Appendix C (continued)

The next day, when the same thing happened, the rabbit and the mouse told the squirrel that if he didn't bring home some food he could not live with them any more.

The squirrel met the chipmunk again and at first he wouldn't play. The chipmunk begged so hard that at last the squirrel went off and played with him.

When he went home at last without any food, he told the mouse and the rabbit that he had been chased by a dog.

The mouse and the rabbit said that he would have to leave, and so he took all his things and went away sadly and lived by himself in a hollow tree.

Yes	No	1. Should the mouse and the rabbit have sent the squirrel away?
Yes	No	2. Should the squirrel have told the excuses he did?
Yes	No	3. Should the squirrel have been sent out for food again?
Yes	No	4. Was the squirrel right to tell about the fox and dog?
Yes	No	5. Should the squirrel have played with the chipmunk?
Yes	No	6. Should the squirrel have left the mouse and rabbit?

Sub-test III

Read the story and then draw a line under your answer.

Mrs. Squirrel sat looking at the pile of nuts stored carefully in the hollow tree which was her home. She remembered how hard she had worked gathering them. The nuts this year had been hard to find. However, she thought that now she had enough to last all winter. Yes, if she were very careful they would be enough to last her and her family all winter.

As she sat there she heard a visitor climbing up outside. It sounded very much like that chattering Mrs. Chipmunk who lived in the tree next door.

"Now what could she be wanting at this time of year," thought Mrs. Squirrel. Mrs. Chipmunk squeezed through the hole that was the Squirrel's front door, and said,

Appendix C - continued

"I hope that you don't mind me dropping in like this Mrs. Squirrel, but I was wondering if you could let me have some nuts for the winter. You know, I was sick this fall and couldn't get out to get very many. Do you think you could let me have some of yours?"

Mrs. Squirrel did not know what to say.

"Just a minute, Mrs. Chipmunk," said Mrs. Squirrel, I must think about it for a little while."

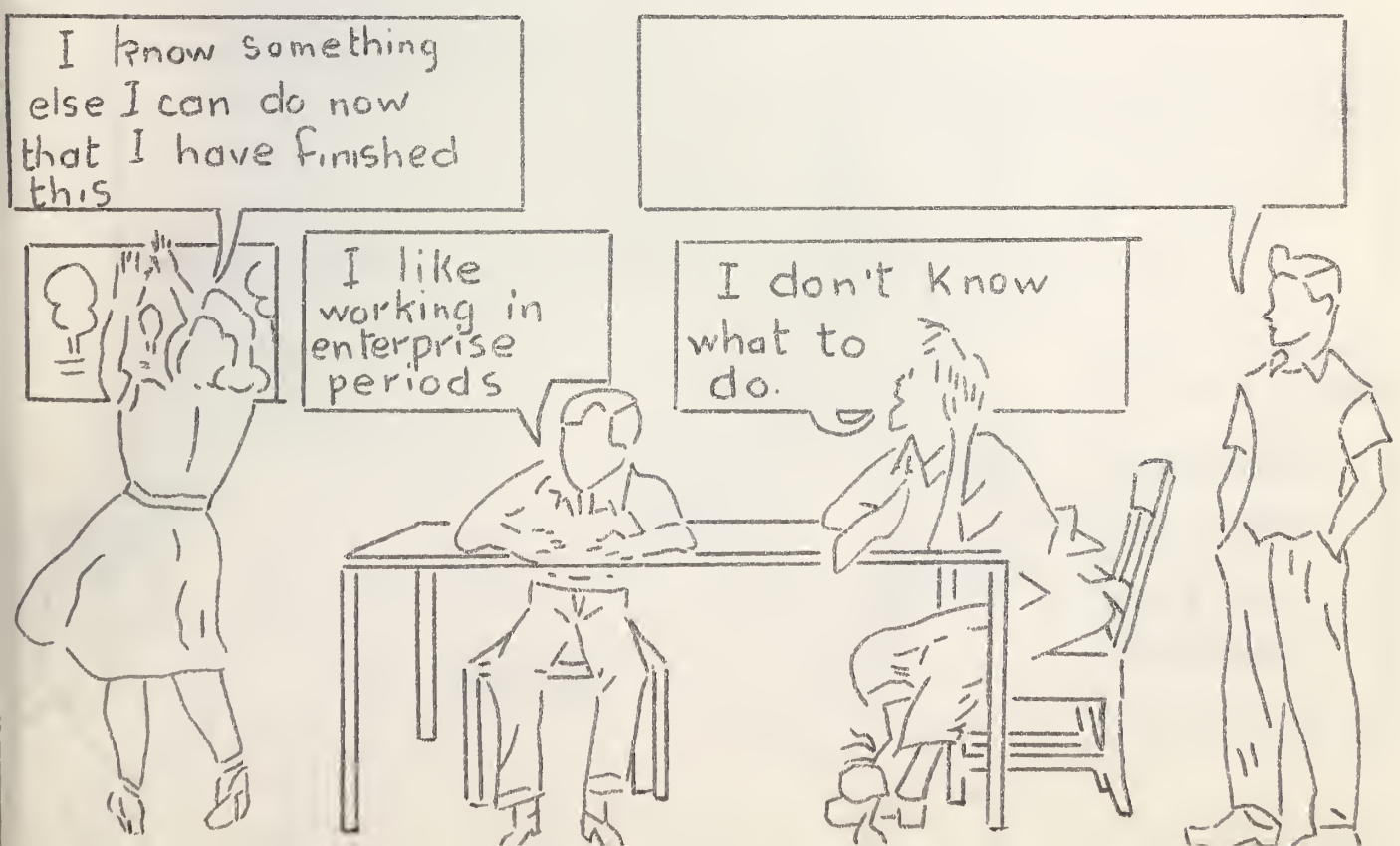
If you were Mrs. Squirrel what would you do?

1. Tell Mrs. Chipmunk you were sorry but you didn't have enough nuts to give her some.

2. Give Mrs. Chipmunk some nuts and try to get along with less.

Sub-test IV.

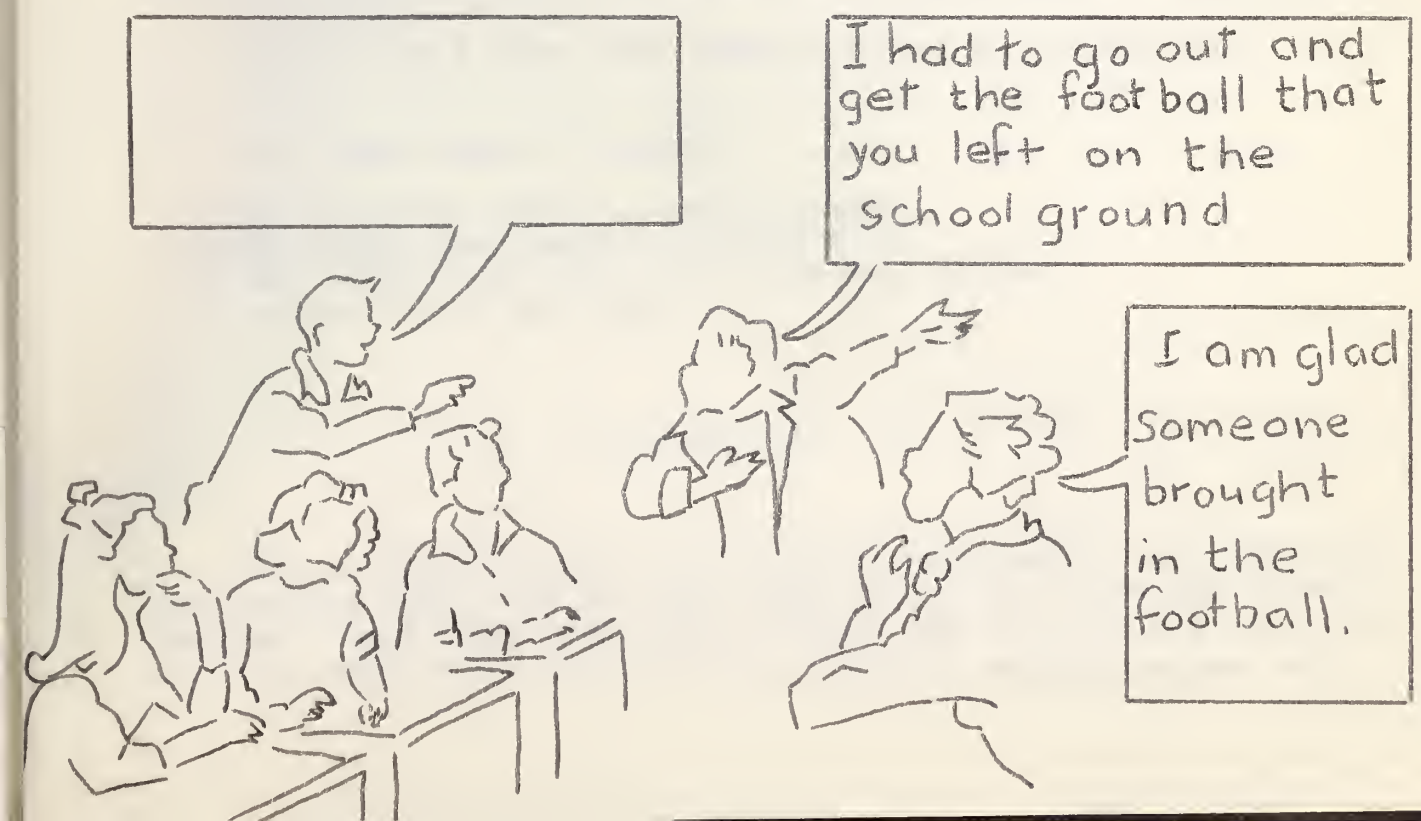
Each of the following pictures has some sentences written below it. For each picture, choose one of the sentences and write or print it in the empty space in that picture.



Appendix C (continued)

1. I don't feel like working with these kids.
2. I think I'll go over and help Howard.
3. I don't like working in groups.
4. I think I'll go over and pinch Ted.

1. He's right, nobody else should use them.
2. He could let them use them.
3. He doesn't have to share them if he doesn't want to.
4. It wouldn't hurt him to share his things.



Appendix C (continued)

1. I'm sorry you had to go out for the ball.
2. I'm glad it was you and not me.
3. I don't care if you did.

Sub-test V

Read the story and then draw a line under your answer.

Sammy Skunk crawled out of the hollow tree which was his home and sat down in the moonlight.

"Sammy," his mother had said, "don't forget that tonight you are to go across the brook and catch enough mice for our supper."

Sammy thought of how nice it would be to go over to Farmer Brown's hen house and eat eggs instead of catching mice. How he loved eggs! He would rather eat eggs than anything else. The more he thought of it the more he wanted those eggs.

"As a matter of fact," he said to himself, "I would rather go without supper than catch mice. I could wait for a while and then go in and tell mother I couldn't find any mice."

He remembered that his mother had said that if she ever caught him eating eggs again he would have to stay home and look after his baby brother. How he hated doing that! Yes, he just couldn't think of anything worse than looking after baby brother.

He sat for a long time wondering what he should do.

If I were Sammy, I would:

1. Go to Farmer Brown's and eat eggs.
2. Go across the brook and catch mice.
3. Sit outside and wait, and then tell mother I couldn't find any mice.

Sub-test VI

Let us suppose that last Saturday your mother had given you twenty-five cents and that she sent you to the store for a few things. The twenty-five cents was for you to go to the show with, and your mother had said that you wouldn't be getting any more

Appendix C (continued)

money for two weeks.

Suppose that while you were at the store you saw some nice candy that you had wanted for a long time and you spent your twenty-five cents on that.

On the way home you began thinking of what you had done. You thought you could either (1) tell mother you had spent the twenty-five cents and that you wanted more money to go to the show, or (2) believe that now you couldn't go to the show and that you would have to stay home that night.

Now, draw a line under the words which tell what you think you would have done.

- - - - - - - - - - - - - - - - - - -

Suppose that a friend of yours owns something which you like very much. It is quite expensive and you have asked your father and mother if you might have one but they have told you that they can't afford to buy it.

Every time you go over to your friend's house you wish you could have one just like it.

Suppose that one day while you were coming home across a vacant lot you saw something a little way off the path and that when you went over to see what it was it turned out to be the thing your friend has. You couldn't imagine how it got there but you picked it up and after looking around to make sure that nobody had seen you, you put it in your pocket and hurried home.

You went to a room in the house where you could be alone and began to look at it and to admire it. While you were doing this you began thinking. You decided that you could either
(1) say nothing to anyone and keep it for yourself, or
(2) go over to your friend's house and return it.

Now, draw a line under the words which tell what you think you would have done.

- - - - - - - - - - - - - - - - - - -

Suppose that you had a neighbour named Mrs. Brown and that you often went over to her house at night to look after her baby while she and Mr. Brown were out.

Let us suppose that you had been looking forward for several days to a birthday party to which you were invited. You had been thinking of the good time you would have there, and all the things you would do. Most of your friends were also going and no one had been able to talk about anything else for days.

Appendix C (continued)

You had promised Mrs. Brown that you would look after her baby right after supper on the same day that you were to go to the party. She and Mr. Brown were to be home in time for you to go. Your own mother and father were going to the show that night and then calling for you to take you home from the party.

You had gone over to the Brown's and a little while after they had left, you had put the baby to bed and it was sleeping quietly. All you had to do was to wait until the Browns came home.

You waited and waited but they didn't come. The time for the party had come and you didn't know what you would do. Then one of your friends phoned and asked if you were coming. They told you that nearly everyone was there and that they were all having a swell time.

After you hung up the phone you sat down and began to think of what you could do. You decided that you could (1) leave the baby sleeping and go to the party, since the Browns would be home soon, or (2) stay with the baby until the Browns came home, and forget about the party.

Now, draw a line under the words that tell what you think you would have done.

Sub-test VII.

There was a gay time in the forest tonight. All the rabbits were gathering for a dance. Soon everyone would be there and the fun would begin.

Old Grandpa Gray, the oldest of all the rabbits, jumped up on a stump and shouted,

"Get your partners for the first dance."

The orchestra began thumping their feet and everyone began to dance in the moonlight. They were all having such a wonderful time that no one noticed Woody Woodchuck watching them with a twinkle in his eyes.

Slowly he started walking right across the place where the rabbits were dancing. Of course when they saw him they all scampered away. Woody sat down on the ground and started to chuckle to himself.

Appendix C (continued)

"Come on out," he called, "I won't hurt you."

Soon the rabbits began coming back one by one.

"I'll just sit here and watch." said Woody.

When the rabbits had got over their scare they started dancing again. After the dance was well under way, Woody began waddling across, getting in everyone's way. At first the rabbits tried not to pay any attention to him but they found they couldn't go on with their fun.

"Please, Woody," said Grandpa Gray, "won't you please sit down?"

"I'm not hurting anyone," chuckled Woody. However, he did go over and sit down at the edge of the clearing.

When the rabbits began dancing again he got up and did the same thing, laughing to himself all the while. He thought he had never had so much fun for a long time.

Finally the rabbits could stand it no longer and they all went home thinking that Woody was a mean fellow.

Draw a line under the sentence you agree with

1. Since Woody wasn't hurting the rabbits, I don't see why they thought he was a mean fellow.

2. Woody wasn't doing the right thing because he wasn't thinking of how the rabbits felt about it.

Appendix D TEACHERS' FORM FOR EVALUATING THE PUPILS

Teacher ..... Grade ..... Date..... School	RESPONSIBILITY										COOPERATION					
	Exhibits a readiness to carry tasks to completion			Behaves honestly with one-self and others.			Accepts the consequences of his own actions.				Has consideration for the rights & feelings of others			Has a willingness to share cheerfully.		
Pupil's name	AA	A	BA	AA	A	BA	AA	A	BA		AA	A	BA	AA	A	BA

TABLE XIV. - RESULTS OF THE TESTS FOR COOPERATION AND THE TEACHERS' EVALUATION

No. of test	I.	III.		IV.			VII.		Teachers' Evaluation Phase 1			Teachers' Evaluation Phase 2		
Question		1	2	1	2	3	1	2	AA	A	BA	AA	A	BA
Case														
1.	22		x		x			x	x			x		
2.	12		x	x	x	x		x		x			x	
3.	11		x		x			x		x			x	
4.	17	x			x	x	x			x		x		
5.	20		x		x	x		x	x			x		
6.	12		x	x	x			x	x				x	
7.	20		x		x			x		x			x	
8.	15	x		x	x	x		x		x			x	
9.	12					x	x		x			x		
10.	18		x		x			x		x			x	
11.	22	x			x	x		x		x			x	
12.	19		x		x	x		x	x				x	
13.	22		x	x	x	x		x	x			x		
14.	20		x	x	x	x		x	x			x		
15.	21		x	x	x	x		x	x			x		
16.	21		x	x	x	x		x	x			x		
17.	19		x	x	x	x	x		x			x		
18.	20		x	x	x	x		x		x			x	
19.	17		x		x	x		x	x				x	
20.	18		x			x		x	x			x		
21.	21		x	x	x	x		x	x			x		
22.	19		x		x	x		x		x			x	
23.	22	x		x	x	x	x		x			x		
24.	17		x	x	x	x		x	x			x		
25.	22		x	x	x	x		x	x			x		
26.	11		x	x		x		x	x			x		
27.	22		x	x	x	x		x	x			x		
28.	21		x	x	x	x		x	x			x		
29.	19		x	x	x	x		x			x			x
30.	17		x	x	x	x		x		x			x	
31.	18		x	x	x			x		x				x
32.	21		x	x	x	x					x			x
33.	23		x	x	x	x		x	x			x		
34.	19		x	x	x	x		x		x			x	
35.	22		x	x	x	x		x		x			x	
36.	22		x	x	x			x		x			x	
37.	16		x		x	x	x			x			x	
38.	25		x	x	x	x		x		x			x	
39.	16		x	x	x	x			x			x		
40.	15		x	x	x	x		x	x			x		
41.	21		x	x	x	x		x	x			x		
42.	13		x		x	x					x		x	
43.	19		x		x		x			x				x
44.	13		x								x		x	
45.	20		x	x	x	x	x				x			x
46.	17	x		x	x		x			x			x	
47.	17									x			x	
48.	13		x	x		x		x		x		x		
49.	15		x				x			x			x	
50.	15		x	x	x		x		x				x	
51.	21		x	x	x	x		x		x				x
52.	16		x	x	x	x			x			x		
53.	16		x		x	x		x		x			x	
54.	11		x	x	x			x		x		x		

No. of test Question	I.	III. 1	III. 2	IV. 1	IV. 2	IV. 3	VII. 1	VII. 2	Teachers' Evaluation Phase 1 AA	Phase 1 A	Phase 1 BA	Phase 2 AA	Phase 2 A	Phase 2 BA
55.	19	x		x	x	x	x			x			x	
56.	18		x		x	x		x		x				x
57.	17		x	x	x	x		x		x			x	
58.	22		x	x	x	x		x		x			x	
59.	14		x		x		x			x		x		
60.	20		x	x	x	x		x	x			x		
61.	12	x			x		x			x			x	
62.	16		x	x	x	x		x		x			x	
63.	16					x		x		x			x	
64.	21		x	x	x	x		x			x			x
65.	12		x			x		x	x			x		
66.	22		x	x		x		x	x			x		
67.	13		x		x		x			x			x	
68.	16	x			x					x			x	
69.	20	x				x		x		x		x		
70.	21	x		x	x	x	x			x		x		
71.	17		x	x	x	x		x		x				x
72.	21		x		x	x		x	x				x	
73.	23		x		x	x		x	x				x	
74.	20		x	x	x	x		x	x				x	
75.	16		x	x	x	x		x			x			x
76.	22		x	x	x	x		x		x			x	
77.	21		x		x			x		x			x	
78.	20	x			x	x		x	x			x		
79.	22		x		x	x		x		x			x	
80.	19		x	x	x	x	x				x			x
81.	18	x		x	x	x		x		x			x	
82.	20		x	x	x	x		x	x			x		
83.	23		x	x	x	x		x		x			x	
84.	16		x	x	x	x		x		x			x	
85.	20		x	x	x	x		x		x			x	
86.	19		x	x	x	x		x		x			x	
87.	23		x			x		x			x		x	
88.	23		x	x	x	x		x	x				x	
89.	16		x	x	x	x		x		x			x	
90.	21		x		x	x		x			x		x	
91.	16		x	x	x	x		x		x			x	
92.	21		x	x	x	x		x		x		x		
93.	19	x		x	x	x		x		x			x	
94.	19		x	x	x	x		x		x				x
95.	20		x			x		x		x				x
96.	22		x		x			x		x			x	
97.	15		x		x		x			x			x	
98.	24		x	x	x	x		x			x	x		
99.	23		x	x	x			x		x			x	
100.	21		x	x	x	x		x		x			x	
101.	21		x	x	x	x		x	x			x		
102.	20		x	x	x	x		x	x			x		
103.	23		x	x	x	x		x	x				x	
104.	22		x	x	x	x		x	x			x		
105.	21		x	x	x			x	x			x		
106.	22		x	x	x	x		x	x			x		
107.	16		x	x	x	x	x			x			x	
108.	24		x	x	x	x		x	x			x		
109.	22		x		x	x		x	x			x		
110.	23	x		x	x	x		x	x			x		

No. of test Question	I.	III.		IV.			VII.		Teachers' Evaluation Phase 1			Phase 2		
		1	2	1	2	3	1	2	AA	A	BA	AA	A	BA
111.	18		x	x	x	x		x		x			x	
112.	24		x		x			x	x				x	
113.	23		x	x	x	x		x		x			x	
114.	23		x	x	x	x		x	x			x		
115.	24		x					x		x			x	
116.	18		x					x	x			x		
117.	21		x		x	x		x		x			x	
118.	21		x	x	x	x	x		x			x		
119.	17		x		x			x		x			x	
120.	19		x	x	x	x		x		x			x	
121.	23		x		x	x		x	x				x	
122.	21		x	x	x	x		x		x			x	
123.	22		x			x		x			x		x	
124.	22	x		x	x	x		x			x		x	
125.	19		x	x	x	x		x		x			x	
126.	18		x	x	x	x		x	x				x	
127.	19		x	x	x	x		x		x		x		
128.	15		x	x	x	x		x	x			x		
129.	19		x	x	x	x		x		x		x		
130.	18		x	x	x	x		x	x			x		
131.	18		x		x	x		x		x			x	
132.	24		x	x	x	x		x		x		x		
133.	19		x	x	x	x		x		x		x		
134.	21		x	x	x	x	x			x			x	
135.	20		x	x	x	x		x	x				x	
136.	23		x	x	x	x	x			x		x		
137.	24	x			x	x	x		x			x		
138.	16		x	x	x			x		x		x		
139.	19		x	x	x	x	x		x			x		
140.	19		x	x	x	x		x		x			x	
141.	25		x	x	x	x	x			x			x	
142.	20		x	x	x	x		x	x				x	
143.	23		x		x	x		x	x			x		
144.	23		x		x			x		x		x		
145.	24		x	x	x	x		x			x	x		
146.	23		x		x	x		x			x			x
147.	21		x	x	x	x		x		x			x	
148.	24		x		x	x		x			x		x	
149.	19		x	x	x			x	x			x		
150.	12		x	x	x		x				x			x
151.	16		x	x	x	x	x				x		x	
152.	18	x			x	x		x		x			x	
153.	18		x	x	x	x		x			x			x
154.	22		x	x	x	x		x			x			x
155.	19		x					x		x			x	
156.	21		x	x	x	x		x	x			x		
157.	16		x				x				x		x	
158.	19		x	x	x	x		x	x				x	
159.	20		x	x	x	x	x		x				x	
160.	16		x	x	x	x		x		x			x	
161.	20		x		x	x		x	x			x		
162.	23		x	x	x	x		x	x			x		
163.	20		x	x	x	x		x		x				x
164.	22		x	x	x	x		x			x			x
165.	23		x	x	x	x		x		x			x	
166.	21		x		x	x		x		x			x	

No. of test	I.	III.		IV.			VII.		Teachers' Evaluation Phase 1			Phase 2		
Question		1	2	1	2	3	1	2	AA	A	BA	AA	A	BA
167.	15		x	x	x	x		x		x		x		
168.	22		x					x		x			x	
169.	16		x		x	x		x	x				x	
170.	19		x	x	x	x		x	x			x		
171.	20		x	x	x	x	x			x		x		
172.	18		x	x	x	x		x		x		x		
173.	21		x	x	x	x		x		x		x		
174.	17		x	x	x	x		x		x			x	
175.	19		x		x	x	x			x			x	
176.	17		x	x	x	x		x		x			x	
177.	19		x	x	x	x		x		x		x		
178.	22		x	x	x	x		x	x			x		
179.	18		x	x	x	x		x		x			x	
180.	21		x	x	x	x		x	x				x	
181.	23		x	x	x	x		x			x			x
182.	18		x	x	x	x		x		x		x		
183.	18		x	x	x	x		x		x			x	
184.	19		x	x	x	x		x		x			x	
185.	23		x	x	x	x	x		x			x		
186.	14		x	x	x	x		x		x		x		
187.	20	x		x	x	x		x		x			x	
188.	17		x				x				x		x	
189.	21		x	x	x	x		x		x			x	
190.	18		x		x	x		x			x		x	
191.	23		x	x	x	x	x			x		x		
192.	20		x	x	x	x		x		x		x		
193.	16		x	x	x	x		x	x			x		
194.	24		x	x	x	x		x	x			x		
195.	16.		x	x	x	x		x		x				x
196.	20		x			x		x			x		x	
197.	23	x		x	x			x		x		x		
198.	22		x	x	x			x		x			x	
199.	18		x	x	x	x		x		x			x	
200.	20		x	x	x	x		x	x				x	
201.	21		x	x	x	x		x	x			x		
202.	22		x	x	x	x		x			x			x
203.	23		x		x	x		x		x			x	
204.	19		x	x	x	x		x	x			x		
205.	19		x	x	x			x		x			x	
206.	21		x	x	x	x		x		x			x	
207.	18		x	x		x		x	x			x		
208.	16		x	x	x	x		x		x		x		
209.	20		x	x	x	x		x		x			x	
210.	14		x					x		x		x		
211.	18		x	x	x	x		x	x			x		
212.	18		x	x	x	x		x	x			x		
213.	21		x	x	x	x		x	x			x		
214.	18		x	x	x	x		x	x			x		
215.	15		x	x	x	x		x		x			x	
216.	16		x		x			x		x				x
217.	16		x	x	x			x		x		x		
218.	23		x	x	x	x		x		x			x	
219.	22		x	x	x	x		x		x		x		

Numbers 1 - 73 Grade 4
Numbers 74 - 146 Grade 5
Numbers 147 - 219 Grade 6

TABLE XV. RESULTS OF THE TESTS FOR RESPONSIBILITY AND THE TEACHERS' EVALUATION.

No. of test	II						V			VI			Teachers' Evaluation Phase 1			Phase 2			Phase 3		
Question	1	2	3	4	5	6	1	2	3	1	2	3	AA	A	BA	AA	A	BA	AA	A	BA
Case																					
1.	x	x	x	x	x	x		x		x	x	x		x		x			x		
2.	x	x	x	x	x	x		x		x	x	x		x		x				x	
3.	x		x	x	x			x				x		x			x			x	
4.				x	x	x		x		x	x	x		x			x			x	
5.		x		x	x			x		x	x	x		x		x			x		
6.		x	x	x	x			x		x	x	x	x			x			x		
7.	x	x		x	x	x		x		x	x	x		x		x			x		
8.				x	x			x		x	x	x		x			x			x	
9.		x		x					x		x		x			x			x		
10.	x	x	x	x	x	x		x		x	x	x		x			x			x	
11.		x		x	x	x		x		x	x	x		x			x				x
12.				x	x			x		x	x	x	x			x			x		
13.	x	x	x	x	x			x		x	x	x			x	x			x		
14.	x	x	x	x	x	x		x			x	x	x			x			x		
15.		x	x	x	x			x		x	x	x	x			x			x		
16.	x	x		x	x	x		x		x	x	x	x			x			x		
17.	x	x	x	x	x	x	x			x	x	x	x			x			x		
18.		x		x	x			x		x	x	x		x			x			x	
19.		x		x	x			x		x	x	x		x		x				x	
20.	x	x	x	x	x	x		x		x	x	x	x			x			x		
21.	x	x	x	x	x	x		x		x	x	x	x			x			x		
22.			x		x	x		x		x	x	x			x		x			x	
23.	x	x		x	x	x		x		x		x	x			x			x		
24.	x	x		x	x	x		x		x	x	x	x			x			x		
25.	x	x		x	x			x		x	x	x	x			x				x	
26.				x				x			x		x			x			x		
27.		x	x	x	x			x		x	x	x	x			x			x		
28.		x		x	x			x		x	x	x		x			x			x	
29.	x	x	x	x	x	x		x		x	x	x			x			x			x
30.		x	x	x	x			x			x	x	x			x			x		
31.	x	x	x	x	x			x		x	x	x			x		x				x
32.		x		x	x			x			x	x		x				x		x	
33.	x	x		x	x	x		x			x	x	x			x				x	
34.	x	x		x	x	x		x		x	x	x		x			x			x	
35.	x	x	x	x	x	x		x			x	x			x		x			x	
36.	x	x		x	x			x			x	x		x			x			x	
37.		x		x	x			x			x	x		x			x			x	
38.				x	x			x		x	x	x		x			x			x	
39.		x		x	x			x		x	x	x	x			x			x		
40.			x		x			x		x	x	x		x		x			x		
41.		x	x	x	x	x		x		x	x			x		x			x		
42.	x	x		x	x			x		x		x			x		x			x	
43.	x	x		x	x										x		x			x	
44.		x		x	x										x		x				x
45.	x		x	x	x			x		x	x	x	x				x				x
46.	x	x		x	x			x				x		x			x			x	
47.															x			x			x
48.	x	x	x	x	x	x		x		x		x	x			x					x
49.			x	x	x			x		x	x			x		x				x	
50.	x	x	x	x	x	x		x		x	x	x	x				x			x	
51.	x	x		x	x	x		x		x	x	x		x			x			x	
52.	x	x	x		x			x			x			x		x				x	
53.		x	x	x	x			x			x	x		x			x			x	
54.	x			x	x			x			x	x	x				x			x	
55.	x	x	x	x	x			x		x	x	x	x				x			x	

No. of test Question	II						V			VI			Teachers' Evaluation Phase 1			Phase 2			Phase 3		
	1	2	3	4	5	6	1	2	3	1	2	3	AA	A	BA	AA	A	BA	AA	A	BA
56.	x	x	x	x	x	x		x		x	x	x			x		x			x	
57.		x		x	x	x		x		x	x	x	x				x			x	
58.		x		x	x			x			x	x			x		x			x	
59.		x		x	x					x		x		x			x			x	
60.		x	x	x	x			x		x	x	x	x				x		x		
61.	x	x	x	x							x			x			x			x	
62.	x	x	x	x	x	x		x		x	x	x	x				x			x	
63.			x	x							x	x		x			x			x	
64.	x	x	x	x	x			x		x	x	x	x			x				x	
65.	x	x	x	x	x			x		x	x	x		x		x				x	
66.	x	x		x	x			x		x	x	x	x			x			x		
67.		x		x	x			x			x	x			x			x			x
68.				x	x	x		x							x	x				x	
69.				x	x	x		x		x	x	x			x		x			x	
70.		x	x	x	x	x		x			x	x			x		x			x	
71.	x	x	x	x	x	x		x		x	x	x	x				x			x	
72.		x		x	x	x		x		x	x	x	x				x		x		
73.	x	x		x	x			x		x	x	x	x			x			x		
74.	x	x		x	x	x		x		x	x	x		x			x			x	
75.	x		x	x	x		x			x		x		x			x				x
76.		x		x	x	x		x		x	x	x			x		x			x	
77.			x		x			x			x	x		x			x			x	
78.		x						x			x	x		x		x				x	
79.	x	x	x	x	x	x		x		x	x	x			x		x			x	
80.	x		x	x	x	x		x		x	x	x		x			x			x	
81.		x		x	x			x		x	x	x	x				x			x	
82.	x	x		x	x			x		x	x	x	x				x			x	
83.	x	x		x	x	x		x			x	x	x				x			x	
84.	x	x		x	x	x		x		x	x	x		x			x			x	
85.		x	x	x	x			x		x	x	x			x		x			x	
86.	x	x	x	x	x	x		x		x	x	x	x				x			x	
87.	x	x	x	x	x			x		x	x	x		x			x				x
88.	x	x		x	x	x		x		x	x	x	x			x			x		
89.		x		x	x			x		x	x	x		x			x			x	
90.	x	x		x	x	x		x		x	x	x			x		x			x	
91.	x	x	x		x	x		x		x	x	x			x		x			x	
92.	x		x	x	x			x		x	x	x		x			x			x	
93.		x		x	x	x		x		x	x	x	x			x				x	
94.	x	x		x	x	x		x		x	x	x			x		x			x	
95.	x	x	x	x	x			x		x	x	x			x		x			x	
96.		x	x	x	x			x		x	x	x			x		x			x	
97.		x	x	x	x			x		x	x	x			x		x			x	
98.	x	x	x	x	x	x		x		x	x	x		x		x			x		
99.	x	x	x	x	x	x		x		x	x	x			x	x				x	
100.	x	x		x	x	x		x		x	x	x	x			x			x		
101.	x	x		x	x	x		x		x	x	x	x			x			x		
102.	x	x		x	x	x		x		x	x	x	x			x			x		
103.	x	x		x	x	x		x		x	x	x	x			x				x	
104.	x	x		x	x	x		x		x	x	x	x			x			x		
105.		x		x	x	x		x		x	x	x		x		x			x		
106.	x	x		x	x	x		x		x	x	x	x			x			x		
107.		x		x	x			x		x	x	x			x			x			x
108.	x	x	x	x	x			x		x	x	x	x			x			x		
109.	x	x	x	x	x	x		x		x	x	x	x			x			x		
110.	x	x		x	x			x		x	x				x	x			x		
111.	x	x		x	x	x		x		x	x				x		x			x	

No. of test	II						V			VI			Teachers' Evaluation								
													Phase 1			Phase 2			Phase 3		
Question	1	2	3	4	5	6	1	2	3	1	2	3	AA	A	BA	AA	A	BA	AA	A	BA
112.		x		x	x	x		x		x	x	x			x			x			x	
113.	x	x		x	x			x		x	x	x		x				x			x	
114.	x		x	x	x			x		x	x	x		x		x			x			
115.	x	x		x	x	x		x			x	x			x		x				x	
116.		x	x	x	x		x			x				x			x		x			
117.	x	x		x	x	x		x		x	x	x		x			x		x			
118.	x	x	x	x	x	x		x		x	x	x		x			x		x			
119.		x	x	x	x	x		x			x			x				x			x	
120.	x	x	x	x	x	x		x		x	x	x		x			x				x	
121.		x	x	x	x	x		x		x	x	x	x				x		x			
122.	x	x	x	x		x		x		x	x	x			x		x				x	
123.	x	x	x	x	x	x		x			x	x		x			x				x	
124.		x		x	x			x		x	x	x		x			x				x	
125.	x	x		x	x			x		x	x	x		x			x				x	
126.		x	x	x	x	x		x			x	x		x			x				x	
127.	x	x			x	x		x		x	x	x	x			x					x	
128.	x	x		x	x	x		x		x	x	x	x			x					x	
129.		x		x	x	x		x		x	x	x		x			x				x	
130.	x	x	x	x	x	x		x		x	x	x	x				x				x	
131.		x	x	x	x	x		x		x	x	x			x		x					x
132.		x	x	x	x	x		x		x	x	x		x			x				x	
133.		x	x	x	x			x		x	x	x		x			x				x	
134.		x		x	x			x		x	x	x		x			x				x	
135.		x		x	x			x		x	x	x		x			x				x	
136.	x	x	x	x	x	x		x		x	x	x		x			x				x	
137.	x			x	x	x		x			x	x	x			x			x			
138.	x	x	x	x	x	x		x		x	x	x	x				x				x	
139.	x	x	x	x	x	x		x		x	x		x			x					x	
140.	x	x	x	x	x	x		x		x	x	x			x		x					x
141.		x	x	x	x			x		x	x	x		x			x				x	
142.	x	x	x	x	x	x		x		x	x	x	x			x					x	
143.	x	x		x	x	x		x		x	x	x		x			x				x	
144.		x	x	x				x		x	x	x		x			x				x	
145.	x	x	x	x	x	x		x		x	x	x		x			x				x	
146.		x	x	x	x	x		x		x	x	x			x		x					x
147.	x	x	x	x	x	x		x		x	x	x		x			x				x	
148.	x			x	x			x		x	x	x			x			x			x	
149.		x	x	x	x			x		x	x	x	x				x		x			
150.	x	x		x	x	x		x			x	x			x			x				x
151.	x			x	x	x		x			x	x			x		x					x
152.	x	x	x	x	x	x		x			x	x		x			x				x	
153.	x	x	x	x	x	x		x		x	x	x			x			x				x
154.	x	x		x	x			x			x	x			x			x				x
155.	x	x	x	x	x			x		x	x	x		x			x				x	
156.	x	x		x	x	x		x			x	x		x		x					x	
157.				x				x		x	x	x			x			x			x	
158.	x	x		x	x	x		x		x	x	x	x			x					x	
159.	x	x	x	x	x			x		x	x	x		x		x			x			
160.		x		x	x	x		x		x	x	x			x		x		x			
161.	x	x	x	x	x			x		x	x	x		x			x		x			
162.	x			x	x	x		x		x	x	x	x			x			x			
163.	x			x	x	x		x		x	x	x			x		x				x	
164.	x	x		x	x	x		x		x	x	x			x			x			x	
165.	x	x	x	x	x	x		x		x	x	x	x				x				x	
166.	x	x	x	x	x	x		x			x	x		x			x				x	
167.	x	x	x	x	x	x		x		x	x	x	x			x					x	

No. of test	II						V			VI			Teachers' Evaluation								
													Phase 1			Phase 2			Phase3		
Question	1	2	3	4	5	6	1	2	3	1	2	3	AA	A	BA	AA	A	BA	AA	A	BA
168.		x		x	x			x		x	x	x	x			x			x		
169.			x		x			x		x	x	x		x		x				x	
170.		x		x				x		x	x	x	x				x		x		
171.	x	x		x	x	x		x		x	x	x			x		x		x		
172.								x		x	x	x		x			x			x	
173.	x	x		x	x	x		x		x	x	x	x				x			x	
174.	x	x		x	x			x		x	x	x		x		x			x		
175.		x		x	x			x		x	x			x		x			x		
176.	x	x	x	x	x	x		x		x	x	x	x				x			x	
177.		x		x	x	x		x		x	x	x			x		x			x	
178.		x	x	x	x			x		x	x	x		x			x			x	
179.	x	x		x	x	x		x		x	x	x		x			x		x		
180.	x	x	x	x	x	x		x		x	x	x		x		x				x	
181.	x	x		x	x	x		x		x	x	x			x		x				x
182.	x	x		x	x	x		x		x	x	x		x			x			x	
183.		x	x	x	x	x		x		x	x	x			x		x				x
184.	x	x		x	x			x		x	x	x			x			x		x	
185.	x	x		x	x	x		x		x	x	x			x	x			x		
186.	x	x	x	x	x			x		x	x	x		x			x			x	
187.	x			x	x			x			x	x			x		x			x	
188.	x	x	x	x	x	x		x			x	x			x			x			x
189.	x	x	x	x	x	x		x		x	x	x			x		x			x	
190.	x	x		x	x	x		x			x	x			x			x		x	
191.		x		x	x			x				x		x		x				x	
192.	x	x	x	x	x	x		x		x	x	x		x			x			x	
193.		x		x	x			x			x	x	x				x			x	
194.		x	x	x	x			x		x	x	x	x			x			x		
195.		x	x	x	x			x		x	x	x		x			x			x	
196.	x	x	x	x	x			x		x	x	x		x			x			x	
197.		x		x	x	x		x		x	x	x	x				x			x	
198.	x	x		x	x	x		x		x	x	x		x			x			x	
199.	x	x		x	x	x		x		x	x	x	x				x			x	
200.	x	x	x	x	x	x		x			x	x		x		x				x	
201.	x	x	x	x	x	x		x		x	x	x	x			x			x		
202.	x	x	x	x	x	x		x		x	x			x				x		x	
203.		x	x	x	x			x			x	x		x			x				x
204.	x	x	x	x	x	x		x		x	x	x	x			x			x		
205.	x	x		x	x	x		x		x	x	x		x			x				x
206.		x	x	x	x			x		x	x	x		x			x			x	
207.	x	x	x	x	x	x		x		x	x	x	x			x			x		
208.	x	x	x	x	x			x		x	x	x	x				x			x	
209.		x		x	x			x		x	x	x		x			x		x		
210.		x	x	x	x	x	x				x	x	x				x			x	
211.		x	x	x	x			x			x	x	x			x				x	
212.		x		x				x		x	x	x	x			x			x		
213.	x	x	x	x	x	x		x		x	x	x	x				x			x	
214.	x	x		x	x	x		x		x	x	x	x			x			x		
215.		x		x	x			x		x	x	x	x				x			x	
216.	x	x	x	x	x	x		x			x	x		x			x				x
217.	x	x	x	x	x			x		x	x	x	x				x			x	
218.	x	x	x	x	x			x		x	x	x		x			x			x	
219.			x	x	x			x		x	x	x	x			x				x	

Numbers 1 - 73 Grade 4
Numbers 74 - 146 Grade 5
Numbers 147 - 219 Grade 6

Appendix G

TABLE XVI. - THE DISTRIBUTION OF RESPONSES TO THE FOUR POSSIBLE WAYS OF ANSWERING EACH PAIR OF QUESTIONS IN SUB-TEST II.

	Grade 4	Grade 5	Grade 6	Total
Questions 1 and 6:				
Number answering Question 1 only of these two questions	16	10	13	39
Number answering Question 6 only of these two questions	9	11	5	25
Number answering Questions 1 and 6	22	37	36	95
Number answering neither question 1 nor 6	26	15	19	60
Questions 2 and 4:				
Number answering Question 2 only of these two questions	1	3	0	4
Number answering Question 4 only of these two questions	12	5	7	24
Number answering Questions 2 and 4	57	64	64	185
Number answering neither Question 2 nor 4	3	1	2	6
Questions 3 and 5:				
Number answering Question 3 only of these two questions	3	2	0	5
Number answering Question 5 only of these two questions	35	35	32	102
Number answering Questions 3 and 5	32	35	37	104
Number answering neither Questions 3 nor 5	3	1	4	8

Appendix H

TABLE XVII. - THE DISTRIBUTION OF SCORES FOR SUB-TEST I.

Score	Grade 4	Grade 5	Grade 6	Total
25	1	1		2
24		7	2	9
23	2	13	8	23
22	10	8	7	25
21	10	9	9	28
20	7	8	9	24
19	7	11	9	27
18	4	6	12	22
17	8	1	3	12
16	7	7	9	23
15	4	2	2	8
14	1		2	3
13	4			4
12	5		1	6
11	3			3
	73	73	73	219

Appendix I DETAIL OF COMPUTATION FOR t-VALUES

1. Sub-tests II and VI

High scores evaluations: $N = 102$ $\Sigma X^2 = 4770$ $\Sigma X = 678$ $M_1 = 6.65$

Low scores evaluations: $N = 117$ $\Sigma X^2 = 5159$ $\Sigma X = 755$ $M_2 = 5.45$

$$\sigma = \frac{1}{102}\sqrt{102(4770) - (678)^2} \qquad \sigma = \frac{1}{117}\sqrt{117(5159)-(755)^2}$$

$$= 1.6066 \qquad = 1.566$$

$$\sigma_{M_1} = \frac{1.6066}{10.099} = .159 \qquad \sigma_{M_2} = \frac{1.566}{10.87} = .145$$

$$\sigma_{dM} = \sqrt{(.159)^2 + (.145)^2}$$

$$= .215$$

$$t = \frac{6.65 - 5.45}{.215} = .930$$

2. Sub-tests III, IV, And VII

High Scores evaluations: $N = 109$ $\Sigma X^2 = 2462$ $\Sigma X = 502$ $M_1 = 4.60$

Low Scores evaluations: $N = 110$ $\Sigma X^2 = 2304$ $\Sigma X = 488$ $M_2 = 4.44$

$$\sigma = \frac{1}{109}\sqrt{109(2462)-(502)^2} \qquad \sigma = \frac{1}{110}\sqrt{110(2304)-(488)^2}$$

$$= 1.173 \qquad = 1.124$$

$$\sigma_{M_1} = \frac{1.173}{10.39} = .113 \qquad \sigma_{M_2} = \frac{1.124}{10.44} = .108$$

$$\sigma_{dM} = \sqrt{(.113)^2 + (.108)^2}$$

$$= .156$$

$$t = \frac{4.60 - 4.44}{.156}$$

$$t = 1.025$$

Appendix I (continued)

3. Sub-test I.

High scores evaluations: $N = 112$ $\Sigma X^2 = 2589$ $\Sigma X = 521$ $M_1 = 4.65$

Low scores evaluations: $N = 107$ $\Sigma X^2 = 2177$ $\Sigma X = 469$ $M_2 = 4.38$

$$6 = \frac{1}{112}\sqrt{112(2589)-(521)^2} \qquad 6 = \frac{1}{107}\sqrt{107(2177)-(469)^2}$$

$$= 1.215 \qquad = 1.065$$

$$6_{M_1} = \frac{1.215}{10.54} = .1153 \qquad 6_{M_2} = \frac{1.065}{10.29} = .1035$$

$$6_{dM} = \sqrt{(.1153)^2 + (.1035)^2}$$

$$= .1549$$

$$t = \frac{4.65 - 4.38}{.1549}$$

$$t = 1.743$$

4. Sub-test I, III, IV, VII

High scores evaluations: $N = 122$ $\Sigma X^2 = 2779$ $\Sigma X = 563$ $M_1 = 4.61$

Low scores evaluations: $N = 97$ $\Sigma X^2 = 1987$ $\Sigma X = 427$ $M_2 = 4.40$

$$6 = \frac{1}{122}\sqrt{122(2779)-(563)^2} \qquad 6 = \frac{1}{97}\sqrt{97(1987)-(427)^2}$$

$$= 1.2177 \qquad = 1.052$$

$$6_{M_1} = \frac{1.2177}{11} = .1107 \qquad 6_{M_2} = \frac{1.052}{9.797} = .1074$$

$$6_{dM} = \sqrt{(.1107)^2 + (.1074)^2}$$

$$= .1542$$

$$t = \frac{4.61 - 4.40}{.1542}$$

$$= 1.362$$

Appendix I (continued)

5. Sub-tests I, IV, and VII

High scores evaluations: $N = 123$ $\Sigma X^2 = 2816$ $\Sigma X = 570$ $M_1 = 4.63$

Low scores evaluations: $N = 96$ $\Sigma X^2 = 1950$ $\Sigma X = 420$ $M_2 = 4.37$

$$\sigma = \frac{1}{123}\sqrt{123(2816)-(570)^2} \qquad \sigma = \frac{1}{96}\sqrt{96(1950)-(420)^2}$$

$$= 1.1912 \qquad = 1.0825$$

$$\sigma_{M_1} = \frac{1.1912}{11.05} = .1078 \qquad \sigma_{M_2} = \frac{1.0825}{9.75} = .111$$

$$\sigma_{dM} = \sqrt{(.1078)^2 + (.111)^2}$$

$$= .1547$$

$$t = \frac{4.63 - 4.37}{.1547}$$

$$= 1.6805$$

Appendix J. DETAIL OF COMPUTATIONS FOR PHI-COEFFICIENTS TABLE XIV.

1. Responsibility
   Phase 1 - Consequence of action

Sub-test II, item 1: Sub-test II, item 6

		Sub-test II, item 6: yes	Sub-test II, item 6: no	
Sub-test II, item 1	yes	.429	.187	.616
	no	.110	.274	.384
		.539	.461	1.000

$$\phi = \frac{(.110)(.187)-(.429)(.274)}{\sqrt{(.616)(.384)(.461)(.539)}}$$

$$= .400$$

Sub-test II, item 1: Sub-test VI, item 1

		Sub-test VI, item 1: yes	Sub-test VI, item 1: no	
Sub-test II, item 1	yes	.498	.114	.612
	no	.288	.100	.388
		.786	.214	1.000

$$\phi = \frac{(.144)(.288)-(.498)(.100)}{\sqrt{(.612)(.388)(.214)(.786)}}$$

$$= .085$$

Sub-test II, item 6: Sub-test VI, item 1

		Sub-test VI, item 1: yes	Sub-test VI, item 1: no	
Sub-test II item 6	yes	.447	.096	.543
	no	.338	.119	.457
		.785	.215	1.000

$$\phi = \frac{(.096)(.338)-(.447)(.119)}{\sqrt{(.543)(.457)(.215)(.785)}}$$

$$= .102$$

Appendix J (continued)

Phase 2 - Honesty

Sub-test II, item 2: Sub-test II, item 4

Sub-test II, item 2	Sub-test II, item 4: Yes	Sub-test II, item 4: No	
yes	.845	.018	.863
no	.110	.027	.137
	.955	.045	1.000

$$\phi = \frac{(.018)(.110)-(.845)(.027)}{\sqrt{(.863)(.137)(.045)(.955)}}$$

$$= .304$$

Sub-test II, item 2: Sub-test VI, item 2

Sub-test II, item 2	Sub-test VI, item 2: Yes	Sub-test VI, item 2: No	
yes	.822	.041	.863
no	.119	.018	.137
	.941	.059	1.000

$$\phi = \frac{(.041)(.119)-(.822)(.018)}{\sqrt{(.863)(.137)(.059)(.941)}}$$

$$= .122$$

Sub-test II, item 4: Sub-test VI, item 2

Sub-test II, item 4	Sub-test VI, item 2: Yes	Sub-test VI, item 2: No	
yes	.899	.055	.954
no	.041	.005	.046
	.940	.060	1.000

$$\phi = \frac{(.055)(.041)-(.899)(.005)}{\sqrt{(.954)(.046)(.060)(.940)}}$$

$$= .042$$

Appendix J (continued)

Phase 3 - completion of a task

Sub-test II, item 3: Sub-test II, item 5

		sub-test II, item 5 yes	sub-test II, item 5 no	
Sub-test II	yes	.484	.018	.502
Item 3	no	.461	.037	.498
		.945	.055	1.000

$$\phi = \frac{(.018)(.461)-(.484)(.037)}{\sqrt{(.502)(.498)(.055)(.945)}}$$

$$= .083$$

Sub-test II, item 3: Sub-test VI, item 3

		Sub-test VI, item 3 yes	Sub-test VI, item 3 no	
Sub-test II	yes	.465	.037	.502
item 3	no	.457	.041	.498
		.922	.078	1.000

$$\phi = \frac{(.037)(.457)-(.465)(.041)}{\sqrt{(.502)(.498)(.078)(.922)}}$$

$$= .017$$

Sub-test II, item 5: Sub-test VI, item 3

		Sub-test VI, item 3 yes	Sub-test VI, item 3 no	
Sub-test II,	yes	.886	.059	.945
item 5	no	.037	.018	.055
		.923	.077	1.000

$$\phi = \frac{(.059)(.037)-(.886)(.018)}{\sqrt{(.945)(.055)(.077)(.923)}}$$

$$= .230$$

Appendix J (continued)

2. Cooperation

Phase 1 - Sharing

Sub-test III, item 2: Sub-test IV, item 2

		sub-test IV, item 2: yes	sub-test IV, item 2: No	
Sub-test III, item 2	yes	.804	.087	.891
	no	.091	.018	.109
		.895	.105	1.000

$$\phi = \frac{(.087)(.091)-(.804)(.018)}{\sqrt{(.891)(.109)(.105)(.895)}}$$

$$= .069$$

Phase 2 - Rights and feelings of others

Sub-test IV, item 1: Sub-test IV, item 3

		sub-test IV, item 3: Yes	sub-test IV, item 3: no	
Sub-test IV, item 1	yes	.635	.068	.703
	no	.178	.119	.297
		.813	.187	1.000

$$\phi = \frac{(.068)(.178)-(.119)(.635)}{\sqrt{(.703)(.297)(.187)(.813)}}$$

$$= .353$$

Sub-test IV, item 1: Sub-test VII, item 2

		sub-test VII, item 2: yes	sub-test VII, item 2: no	
Sub-test IV, item 1	yes	.603	.100	.703
	no	.224	.073	.297
		.827	.173	1.000

$$\phi = \frac{(.100)(.224)-(.603)(.073)}{\sqrt{(.703)(.297)(.173)(.827)}}$$

$$= .126$$

Appendix J (continued)

Sub-test IV, item 3: Sub-test VII, item 2

		Sub-test VII, item 2 yes	Sub-test VII, item 2 no	
Sub-test IV,	yes	.694	.119	.813
Item 3	no	.123	.064	.187
		.817	.183	1.000

$$\phi = \frac{(.119)(.123)-(.064)(.694)}{\sqrt{(.813)(.187)(.183)(.817)}}$$

$$= .198$$

TABLE XV

Responsibility

1. Phase 1 - Consequence of action

Score 1 - Sub-test II, item 1, item 6: Teachers' evaluation

		Teachers' evaluation AA	Teachers' evaluation A & BA	
Sub-test II - 1	2	.128	.301	.429
II - 6	0-1	.151	.420	.571
		.279	.721	1.000

$$\phi = \frac{(.301)(.151)-(.420)(.128)}{\sqrt{(.429)(.571)(.721)(.279)}}$$

$$= .036$$

Score 2 - Sub-test II-1.-6. Sub-test VI-1: Teachers' evaluation

		Teachers' evaluation AA & A	Teachers' evaluation BA	
Sub-tests II - 1	2-3	.580	.082	.662
II - 6	0-1	.315	.023	.338
VI - 1		.895	.105	1.000

$$\phi = \frac{(.580)(.023)-(.082)(.315)}{\sqrt{(.662)(.338)(.105)(.895)}} = .082$$

Appendix J (continued)

2. Phase 2 - Honesty

Score 1 - Sub-test II-2,-4, : Teachers' evaluation

		Teachers' evaluation AA	A & BA	
Sub-test II - 2 II - 4	2	.292	.553	.845
	0-1	.059	.096	.155
		.351	.649	1.000

$$\phi = \frac{(.553)(.059)-(.292)(.096)}{\sqrt{(.845)(.155)(.649)(.351)}}$$

$$= .023$$

Score 2 - Sub-test II-2,-4,, VI-2 : Teachers' evaluation

		Teachers' evaluation AA & A	BA	
Sub-test II - 2 II - 4 VI - 2	2-3	.886	.069	.955
	0-1	.041	.004	.045
		.927	.073	1.000

$$\phi = \frac{(.886)(.004)-(.069)(.041)}{\sqrt{(.955)(.045)(.073)(.927)}}$$

$$= .013$$

3. Phase 3 - Completion of a task

Score 1 - Sub-test II-5, VI-3 : Teachers' evaluation

		Teachers' evaluation AA	A & BA	
Sub-test II - 5 II - 3	2	.338	.539	.877
	0-1	.023	.100	.123
		.361	.639	1.000

$$\phi = \frac{(.539)(.023)-(.338)(.100)}{\sqrt{(.877)(.123)(.639)(.361)}}$$

$$= .133$$

Appendix J (continued)

Score 2 - Sub-test II-5, VI-3, II-3 : Teachers' evaluation

		Teachers' evaluation AA & A	BA	
Sub-test II - 5 VI - 3 II - 3	2-3	.716	.215	.931
	0-1	.037	.032	.069
		.753	.247	1.000

$$\phi = \frac{(.215)(.037)-(.716)(.032)}{\sqrt{(.931)(.069)(.247)(.753)}}$$

$$= .138$$

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1. Sub-test I : Teachers' evaluation

		Teachers' evaluation 4-6	1-3	
Sub-test I	8 -14	.543	.095	.638
	11-18	.297	.065	.362
		.840	.160	1.000

$$\phi = \frac{(.297)(.095) - (.543)(.065)}{\sqrt{(.638)(.362)(.160)(.840}}$$

$$= .040$$

2. Sub-test III-2, IV-2 : Teachers' evaluation

		Teachers' evaluation AA	A & BA	
Sub-test III - 2 IV - 2	2	.324	.489	.813
	0-1	.078	.109	.187
		.402	.598	1.000

$$\phi = \frac{(.489)(.078)-(.324)(.109)}{\sqrt{(.813)(.187)(.598)(.402)}}$$

$$= .016$$

Appendix J (continued)

3. Sub-test IV-1, IV-3, VII-2 : Teachers' evaluation

Sub-test IV - 1, IV - 3, VII - 2		Teachers' evaluation AA	Teachers' evaluation A & BA	
	2-3	.324	.507	.831
	0-1	.027	.142	.169
		.351	.649	1.000

$$\phi = \frac{(.507)(.027)-(.324)(.142)}{\sqrt{(.831)(.169)(.649)(.351)}}$$

$$= .180$$

4. Sub-test 1, III-2, IV-1-2-3, VII-2 : Teachers' evaluation

Sub-test I, III - 2, IV -1-2-3, VII - 2		Teachers' evaluation 4-6	Teachers' evaluation 1-3	
	10-19	.675	.128	.803
	0-9	.165	.032	.197
		.840	.160	1.000

$$\phi = \frac{(.128)(.165)-(.675)(.032)}{\sqrt{(.803)(.197)(.160)(.840}}$$

$$= .00344$$

(For items 5, 6, and 7, see calculations 1, 2, 3, previous Table)

8. Sub-test II and VI, all items : Teachers' evaluation

Sub-test II, VI		Teachers' evaluation 7-9	Teachers' evaluation 3-6	
	5-9	.470	.475	.945
	0-4	.018	.037	.055
		.488	.512	1.000

$$\phi = \frac{(.475)(.018)-(.470)(.037)}{\sqrt{(.945)(.055)(.512)(.488)}}$$

$$= .078$$

Appendix J (continued)

9. Teachers' evaluation - responsibility : Teachers' evaluation - cooperation

		cooperation 4-6	cooperation 1-3	
Responsibility	6-9	.712	.041	.753
	3-5	.128	.119	.247
		.840	.160	1.000

$$\phi = \frac{(.712)(.119)-(.128)(.041)}{\sqrt{(.753)(.247)(.160)(.840)}}$$

$$= .500$$

Combined scores for responsibility : Combined scores for cooperation

		cooperation 13-19	cooperation 0-12	
Responsibility	7-9	.470	.256	.726
	0-6	.087	.187	.274
		.557	.443	1.000

$$\phi = \frac{(.256)(.087)-(.470)(.187)}{\sqrt{(.726)(.274)(.443)(.557)}}$$

$$= .093$$

For Reference

NOT TO BE TAKEN FROM THIS ROOM

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